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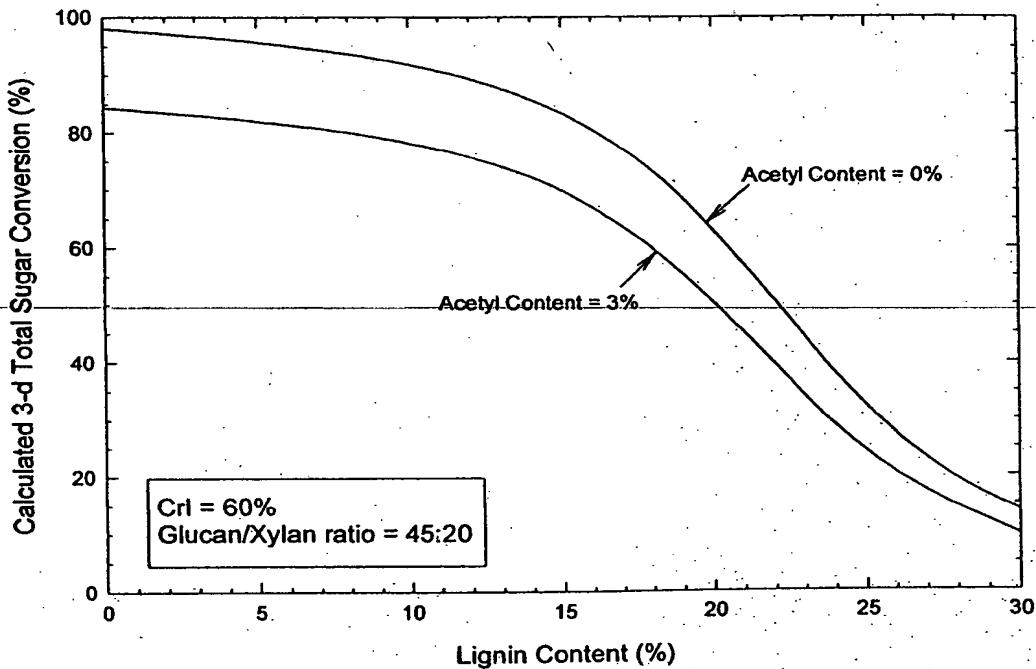


Fig. 1  
PRIOR ART

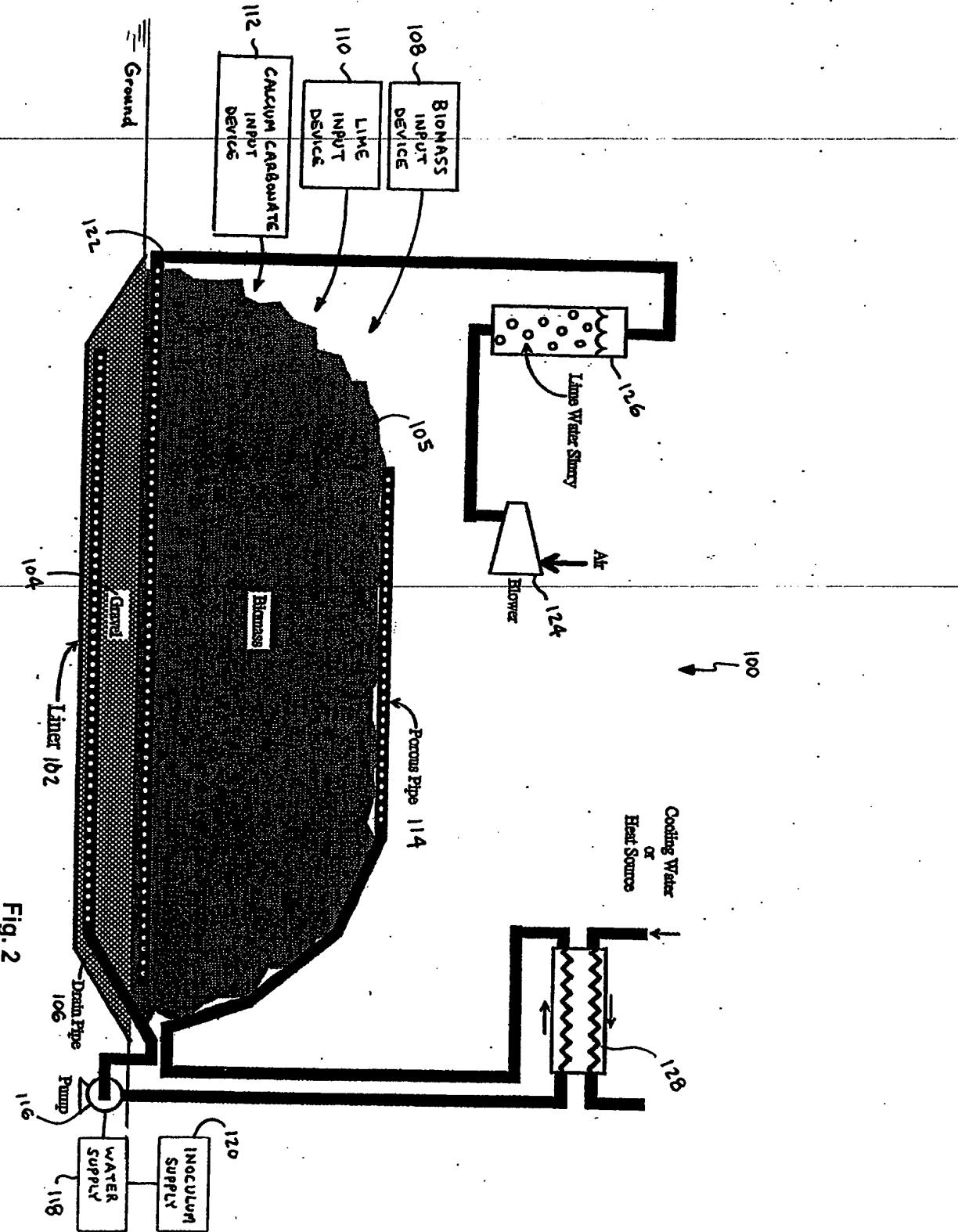


Fig. 2

METHODS AND SYSTEMS FOR  
PRETREATMENT AND PROCESSING OF  
BIOMASS      Filed: 10/31/03  
Inventors: Mark Holtzapple et al.  
Attorney Docket: 017575.0782      Page 3 of 51  
(TAMUS 1955/1603/1571)

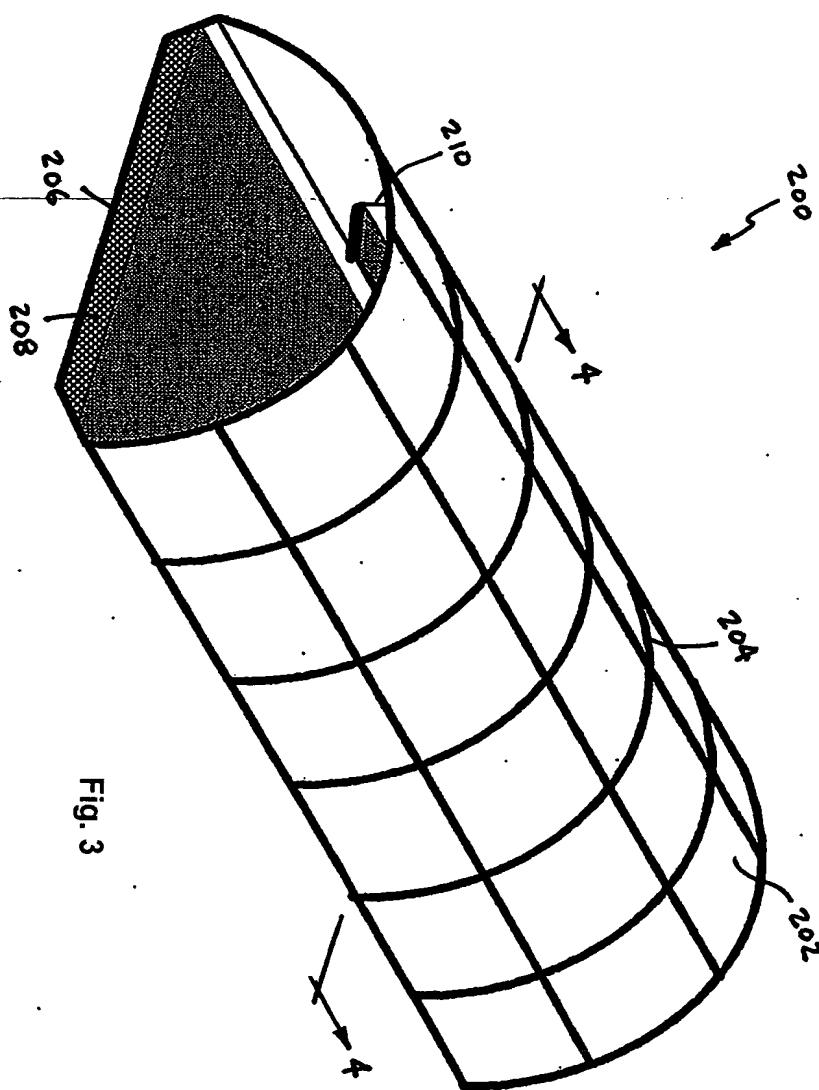


Fig. 3

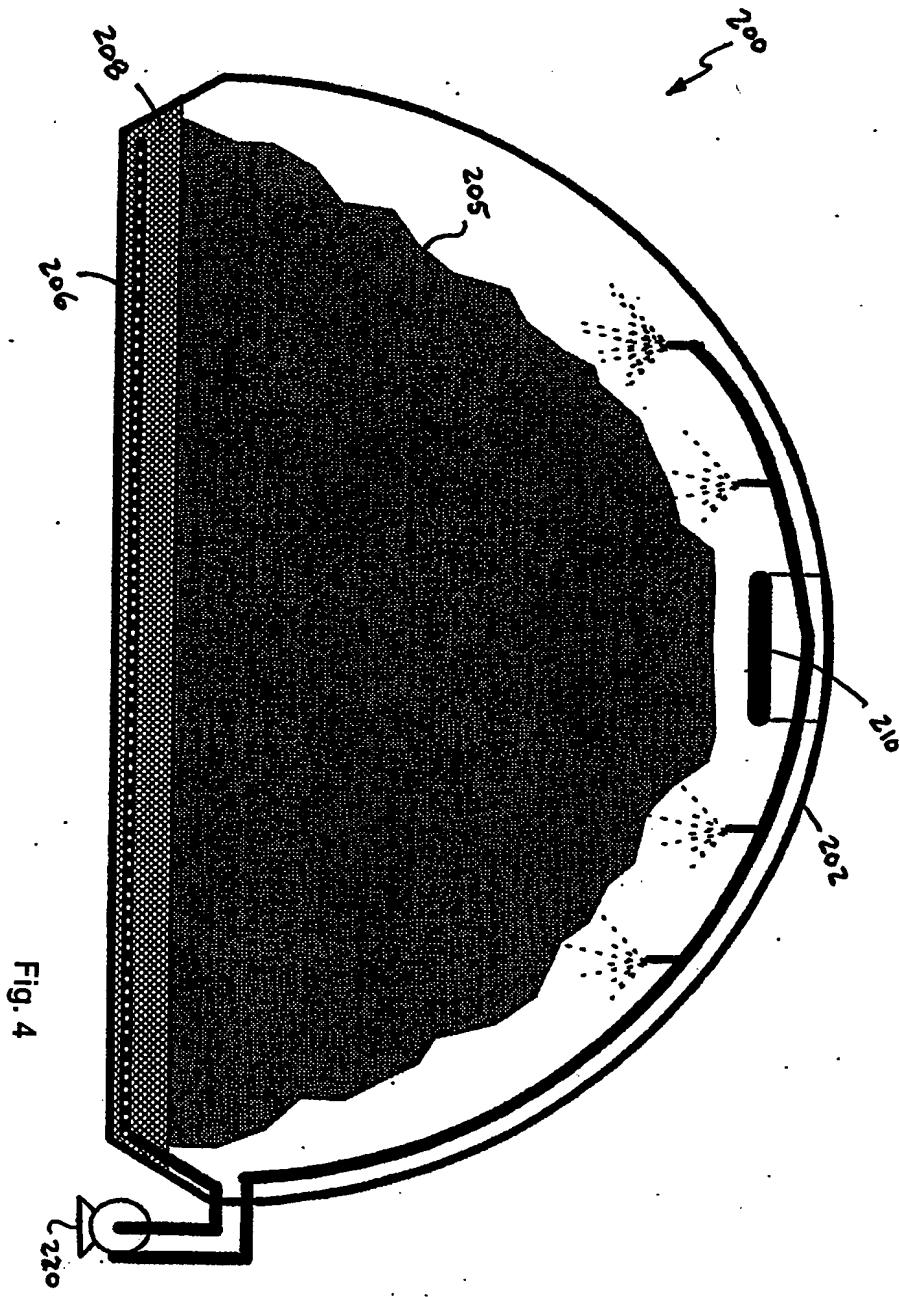


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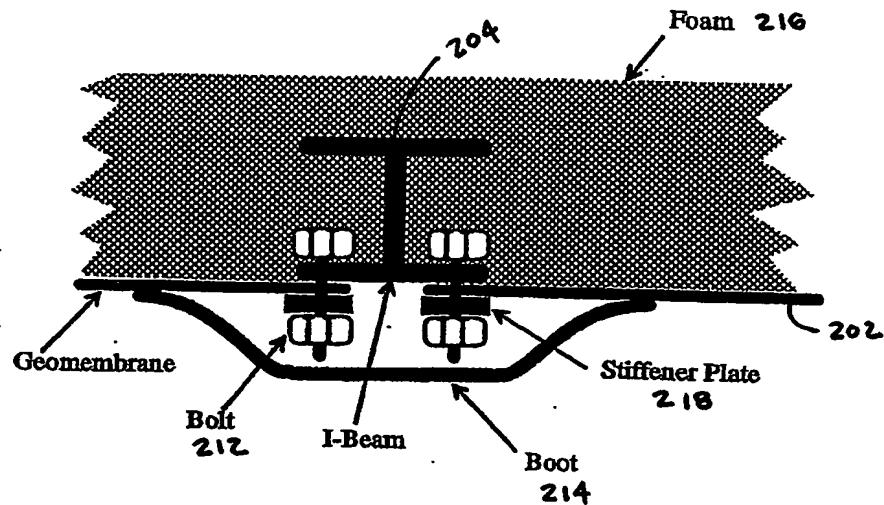


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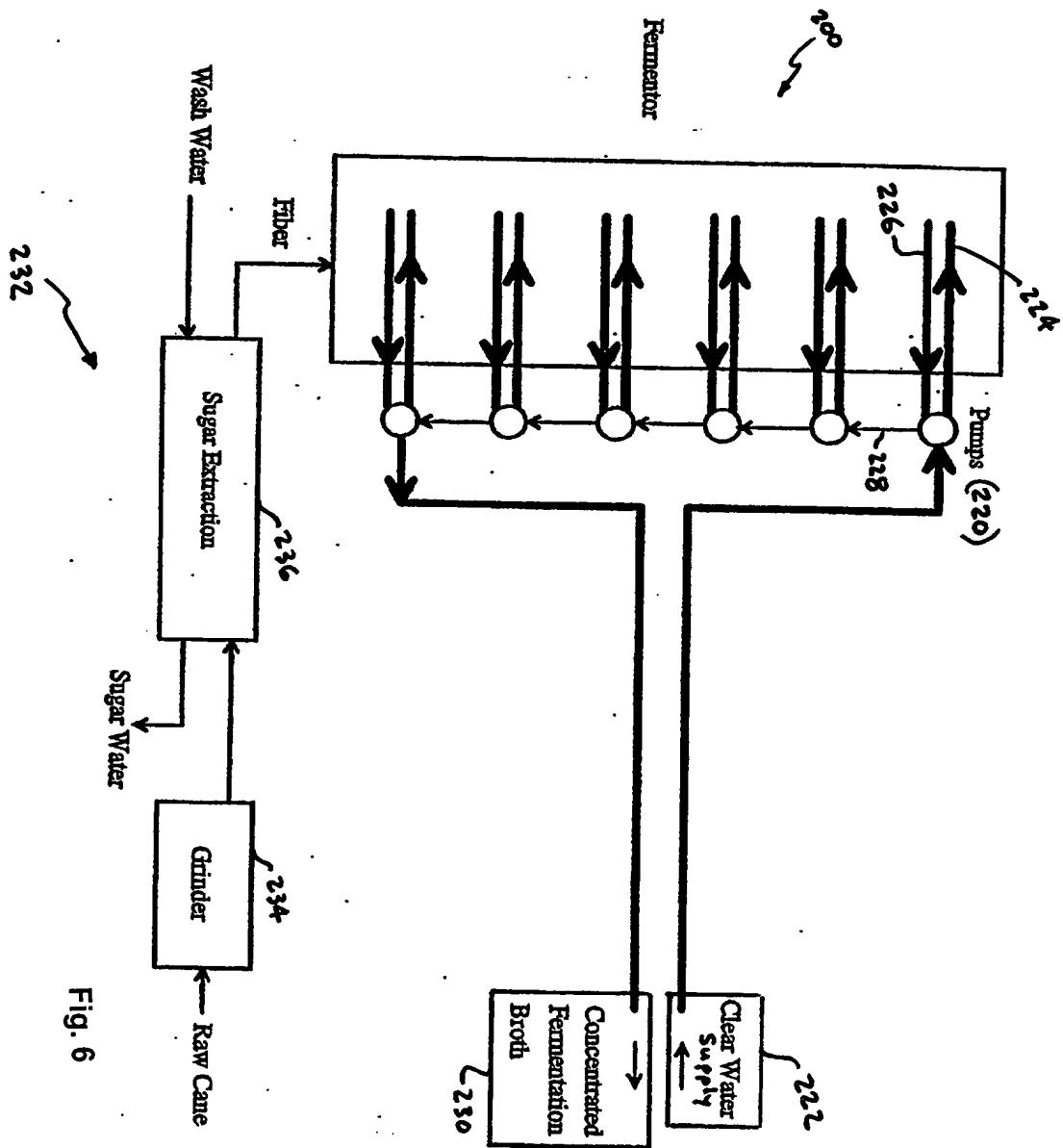
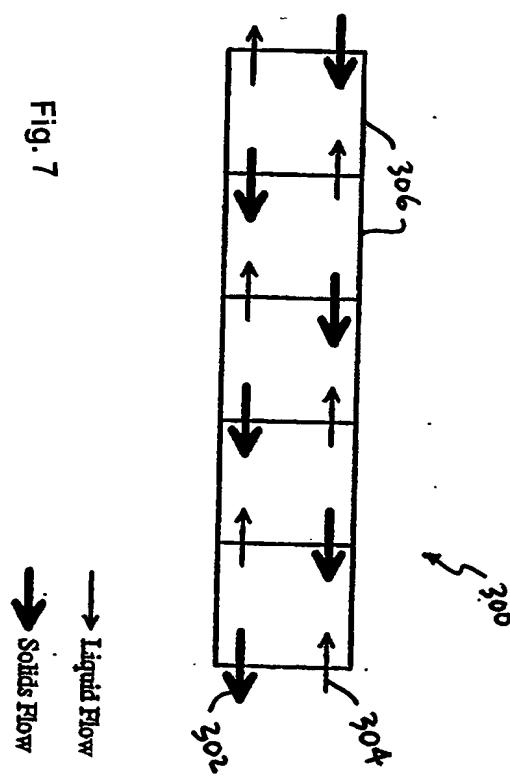


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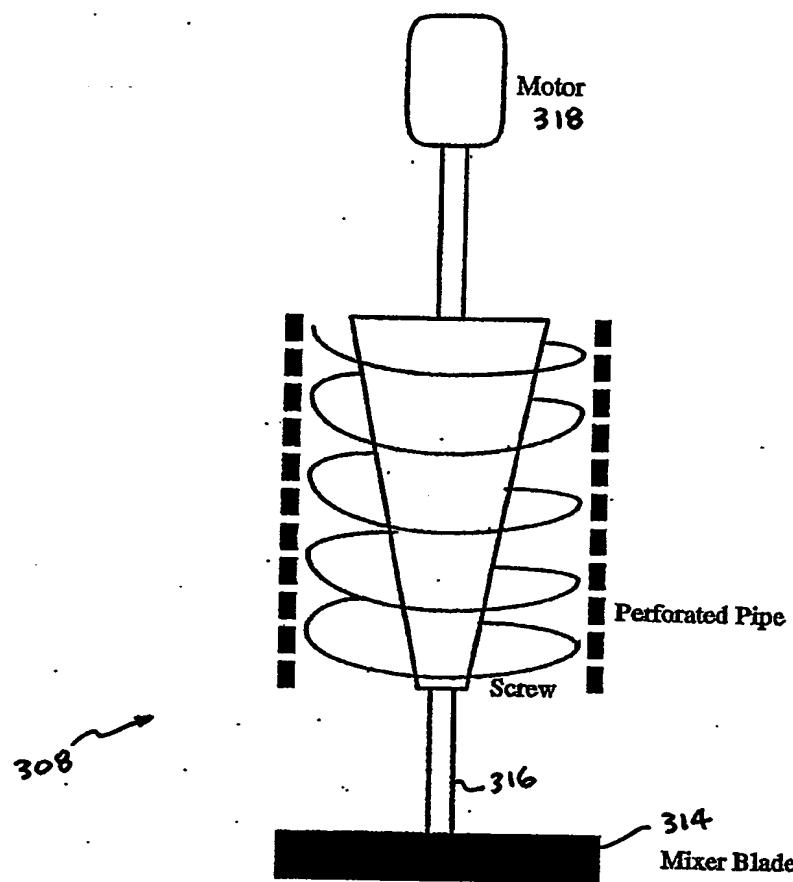
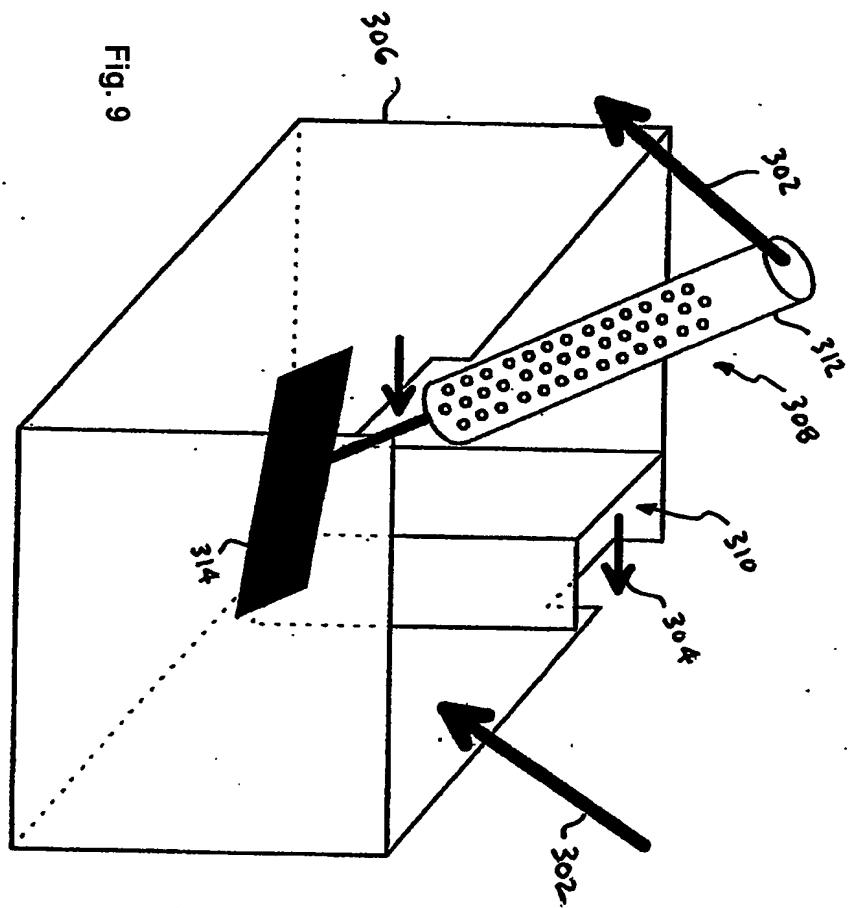
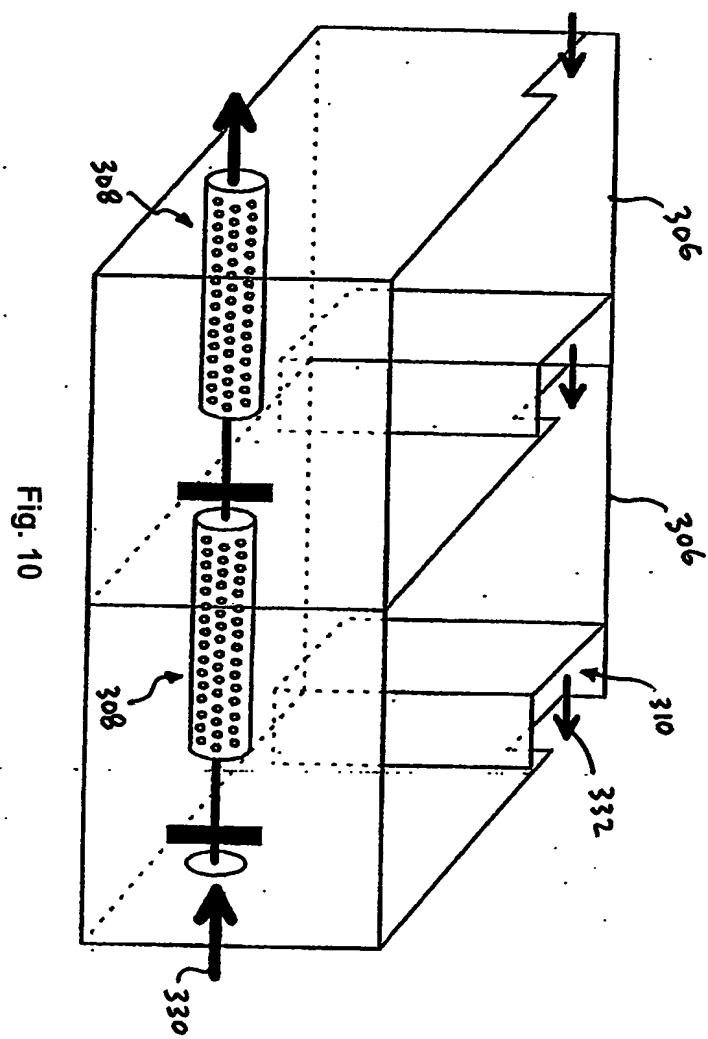


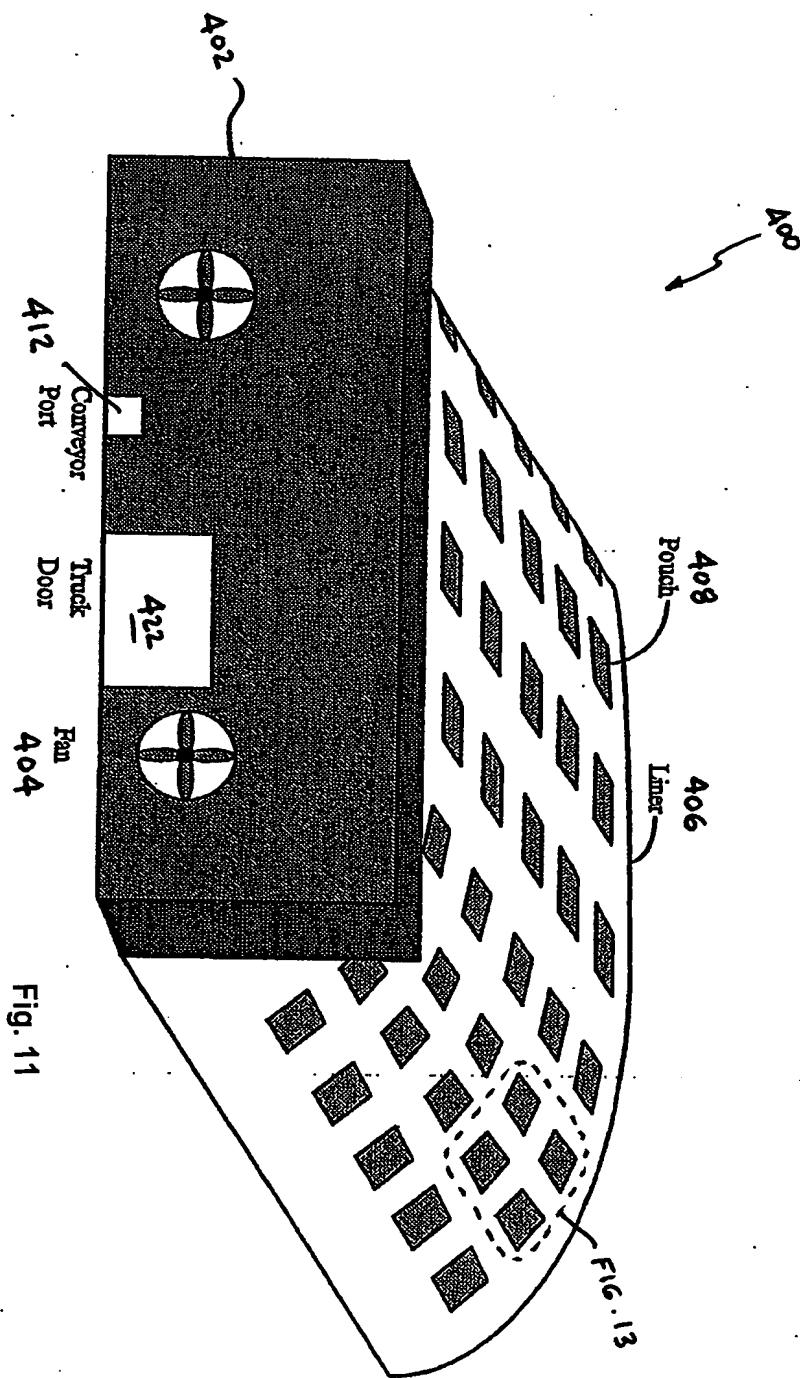
Fig. 8

METHODS AND SYSTEMS FOR  
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Fig. 9







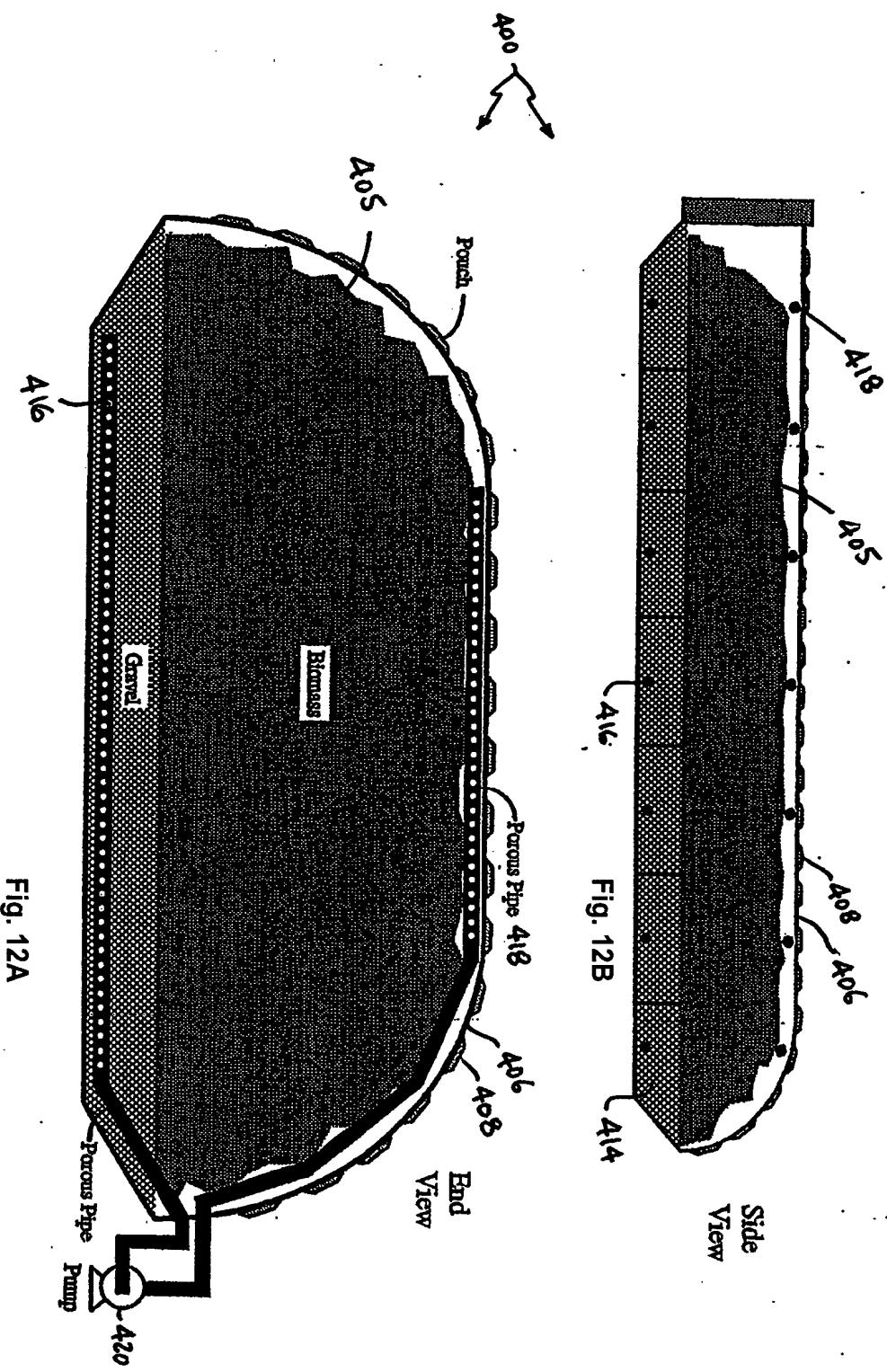
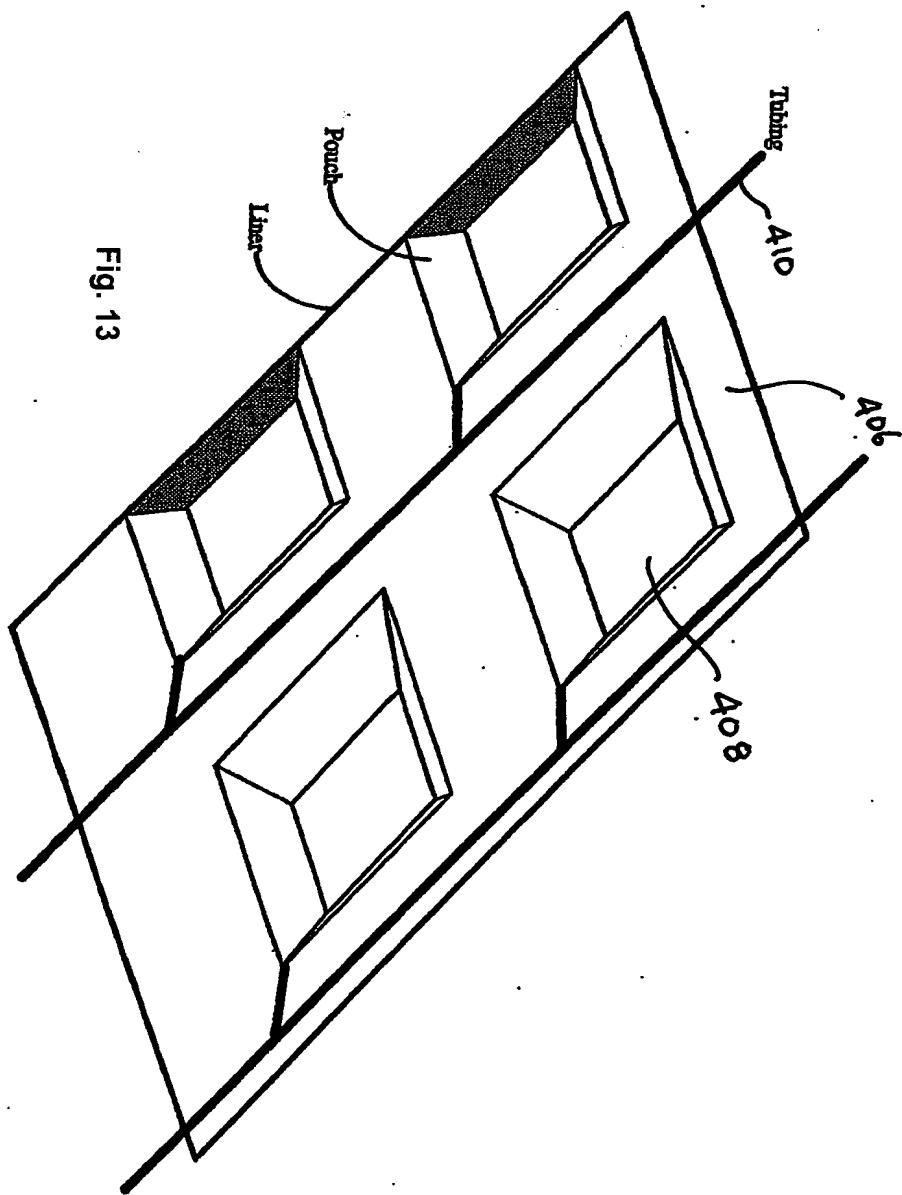


Fig. 13



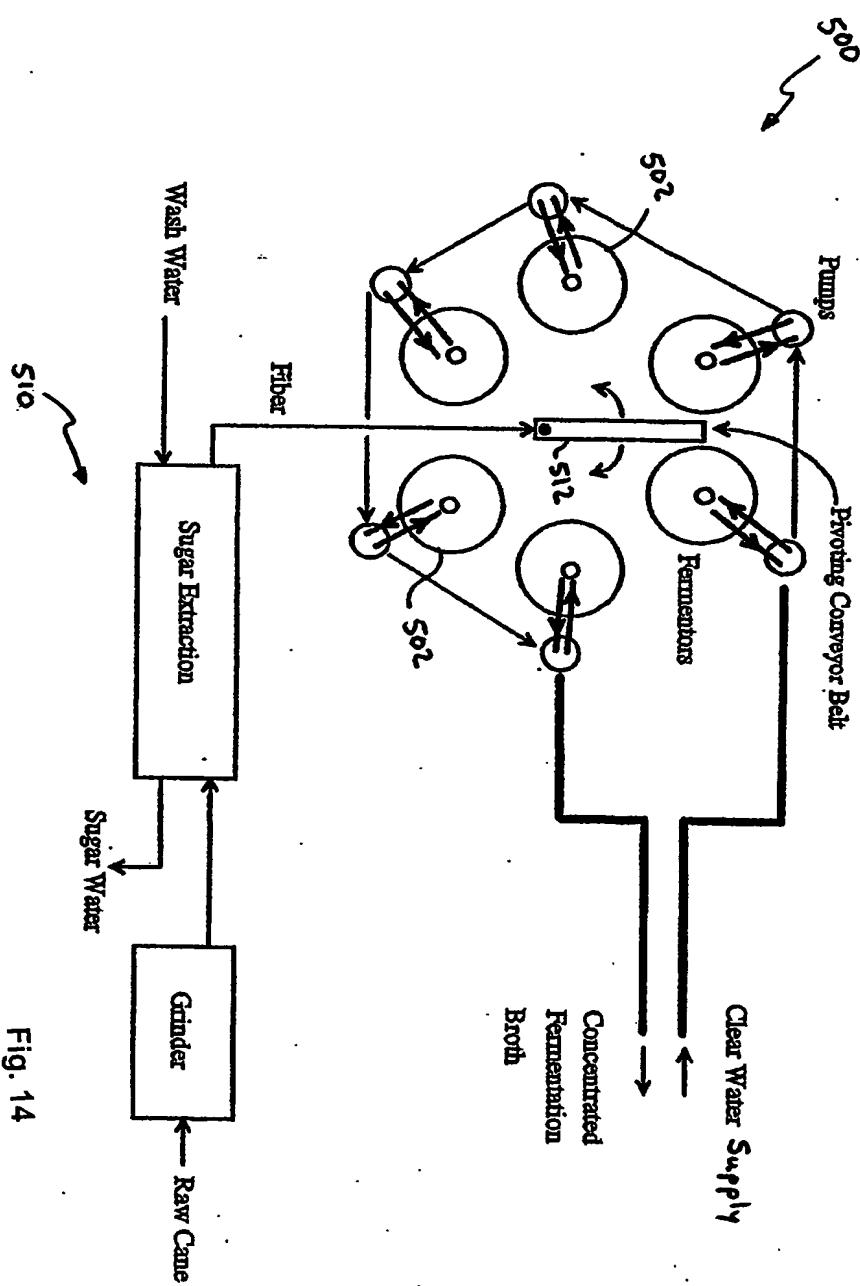


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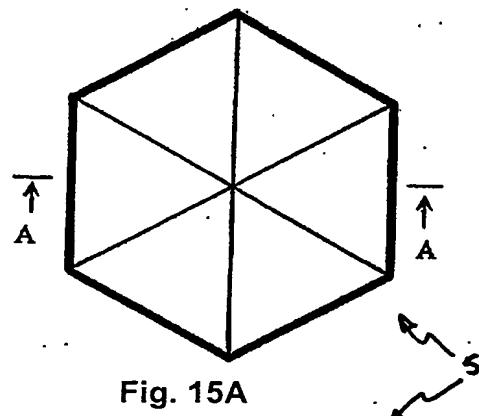
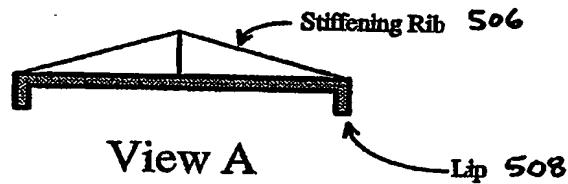
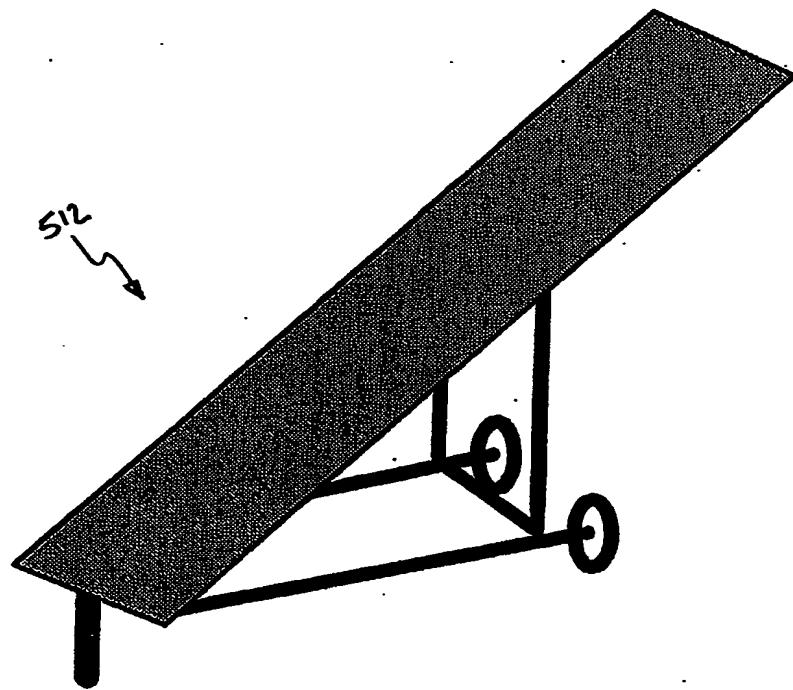


Fig. 15A



View A

Fig. 15B



**Fig. 16**

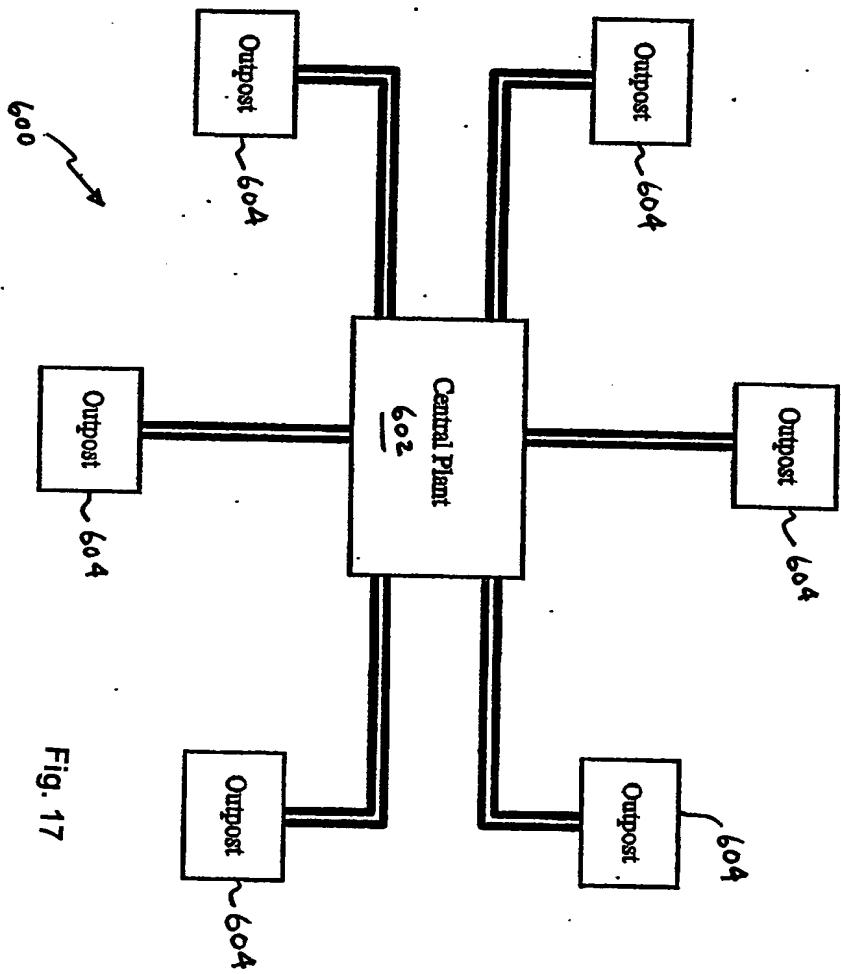
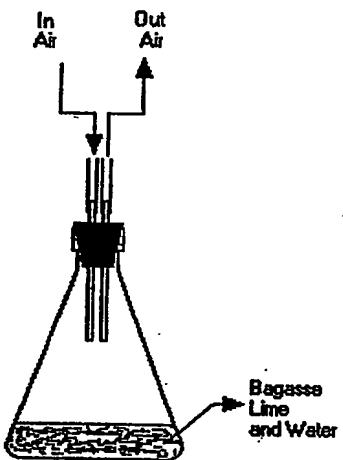


Fig. 17

**METHODS AND SYSTEMS FOR  
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**Fig. 18**

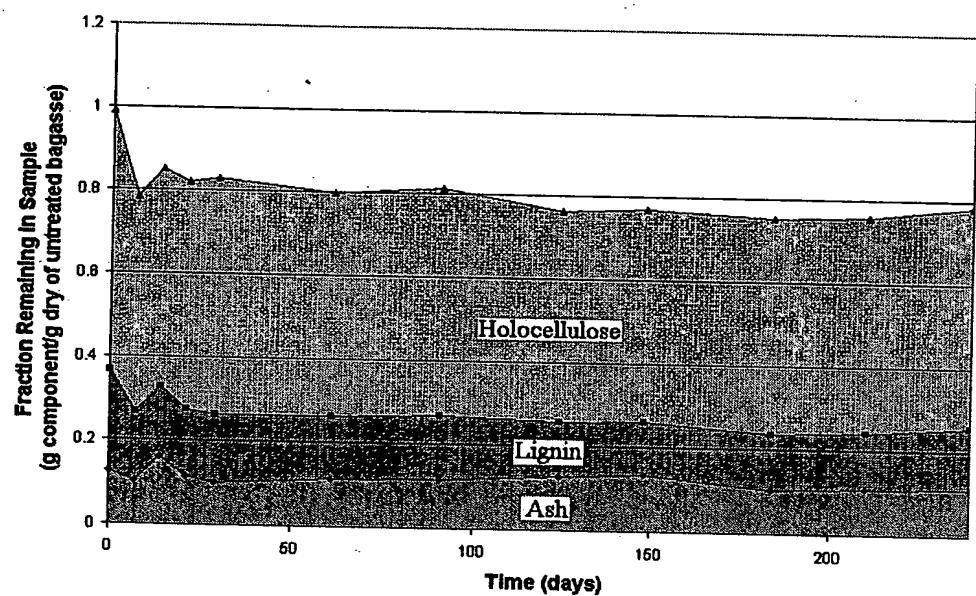


Fig. 19

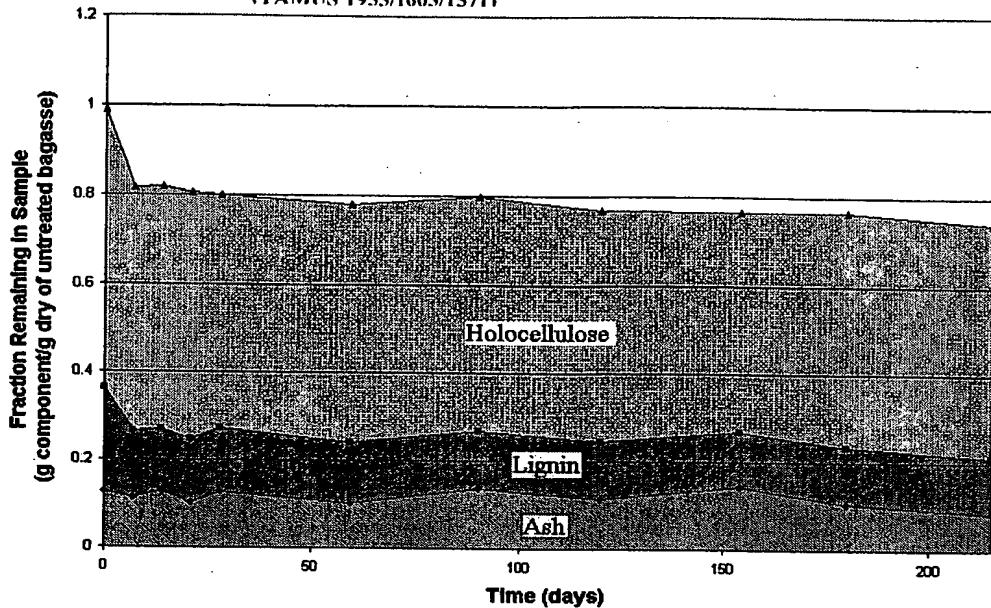


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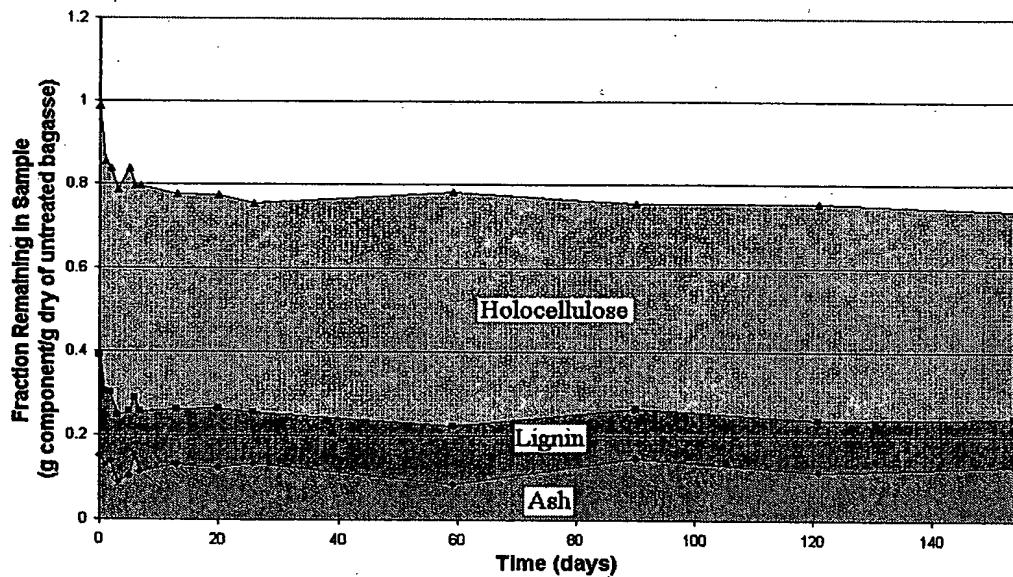


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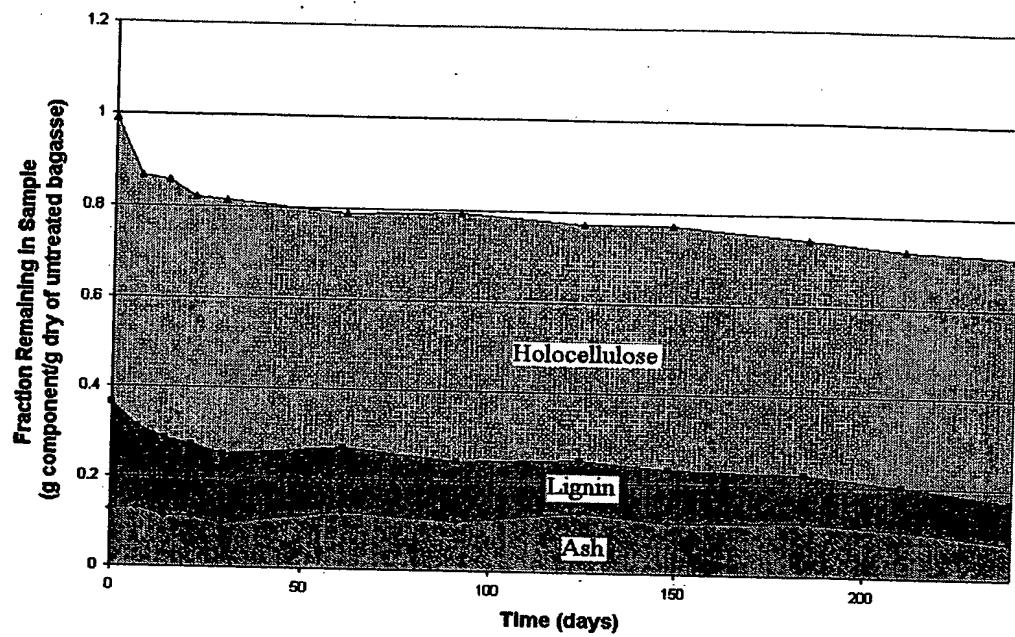


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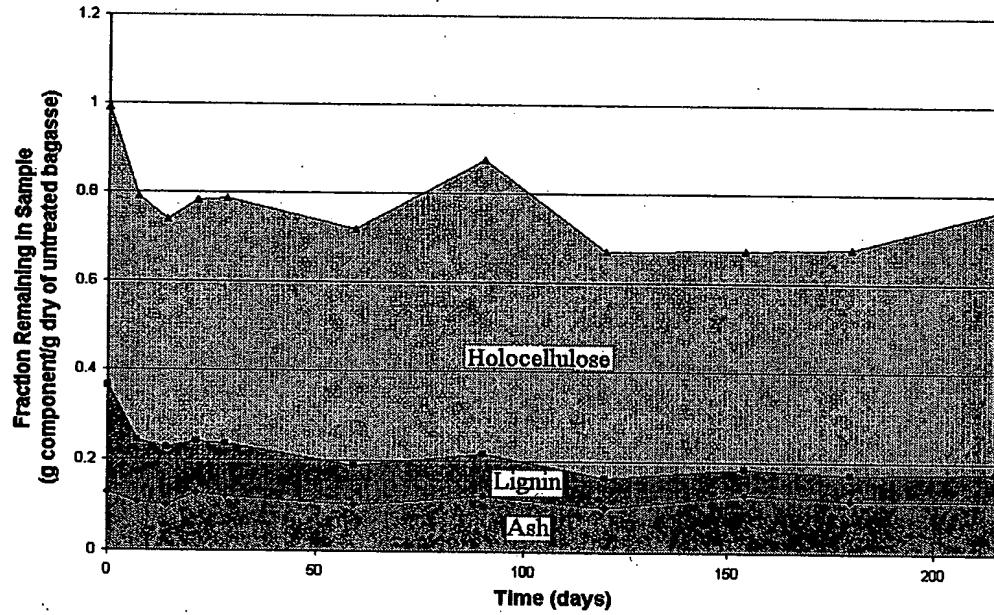


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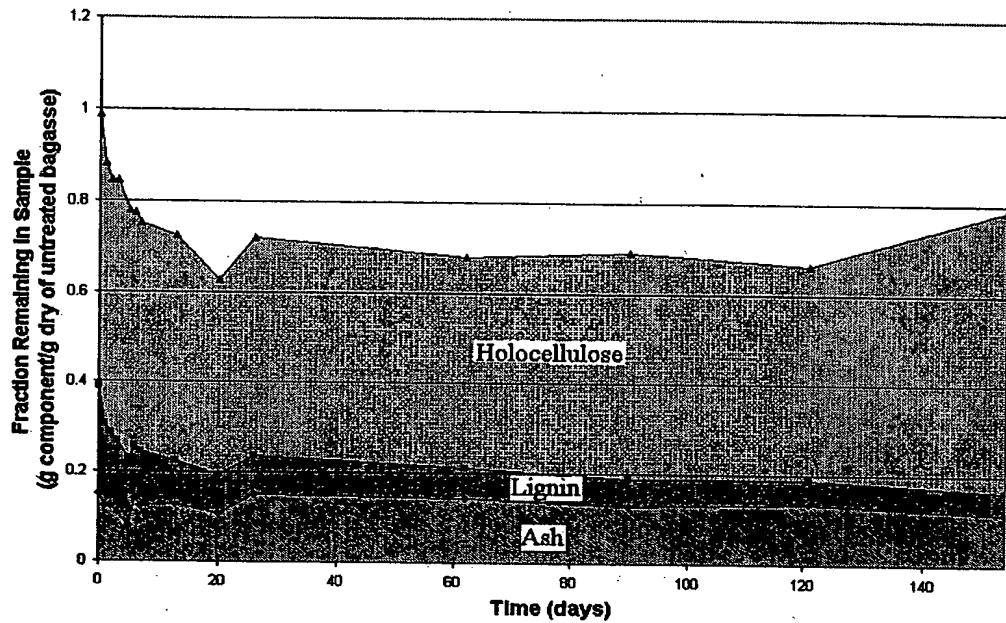


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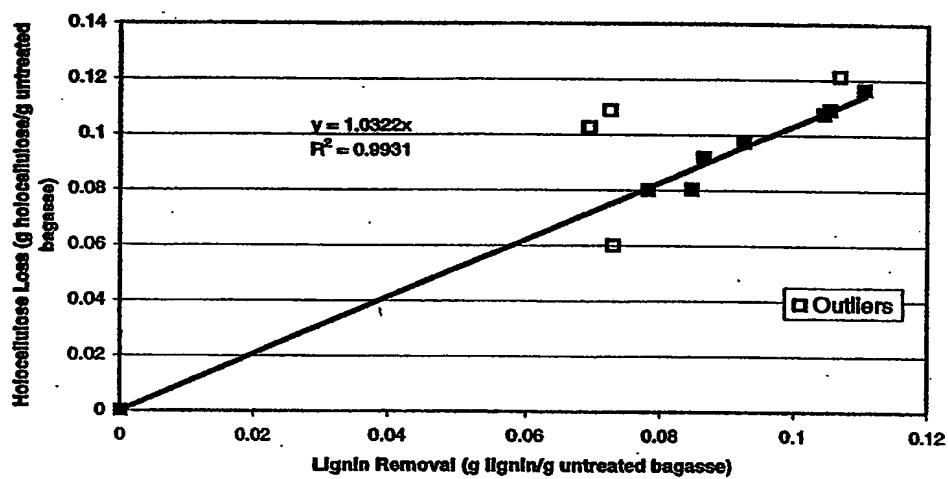


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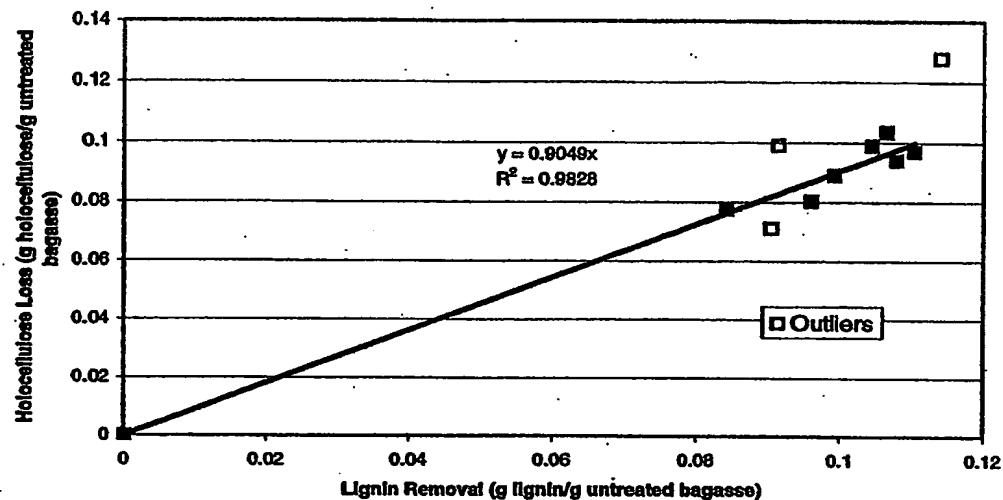


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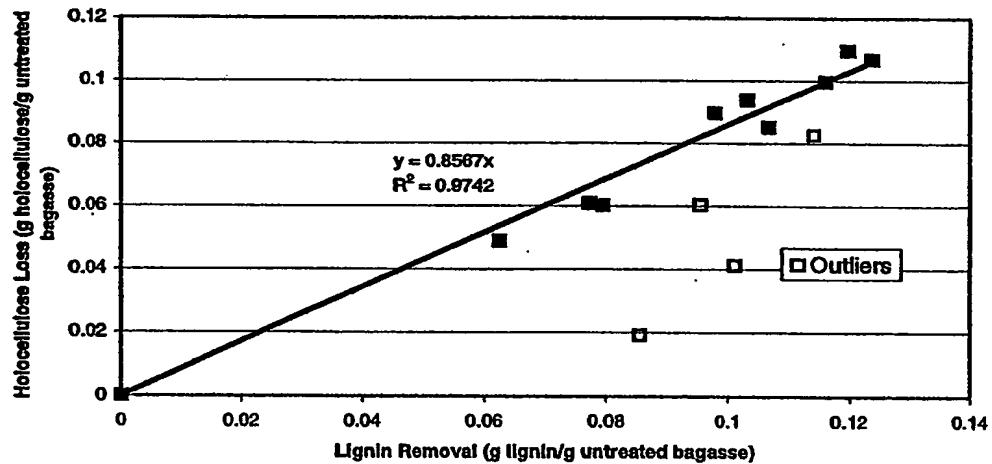


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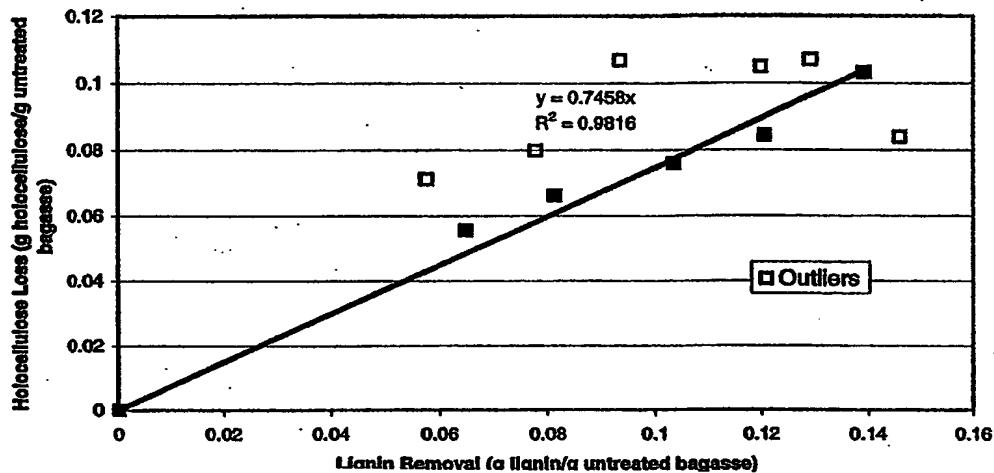


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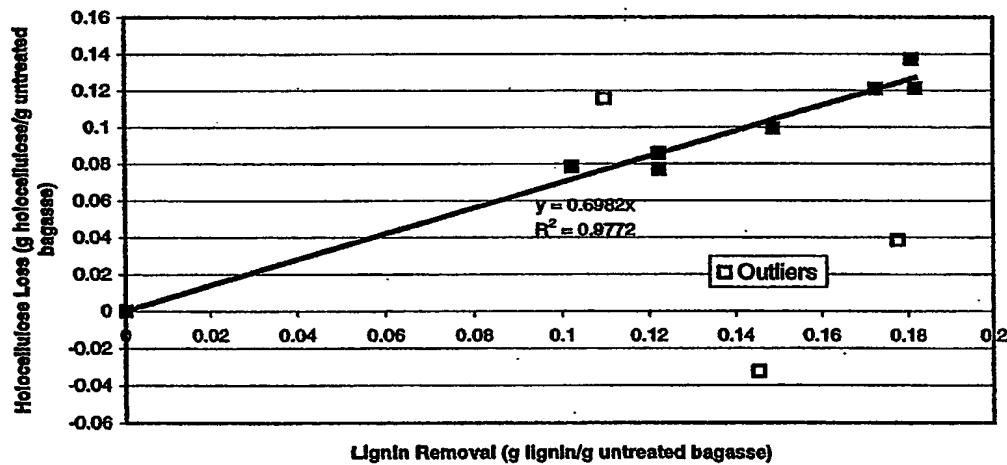


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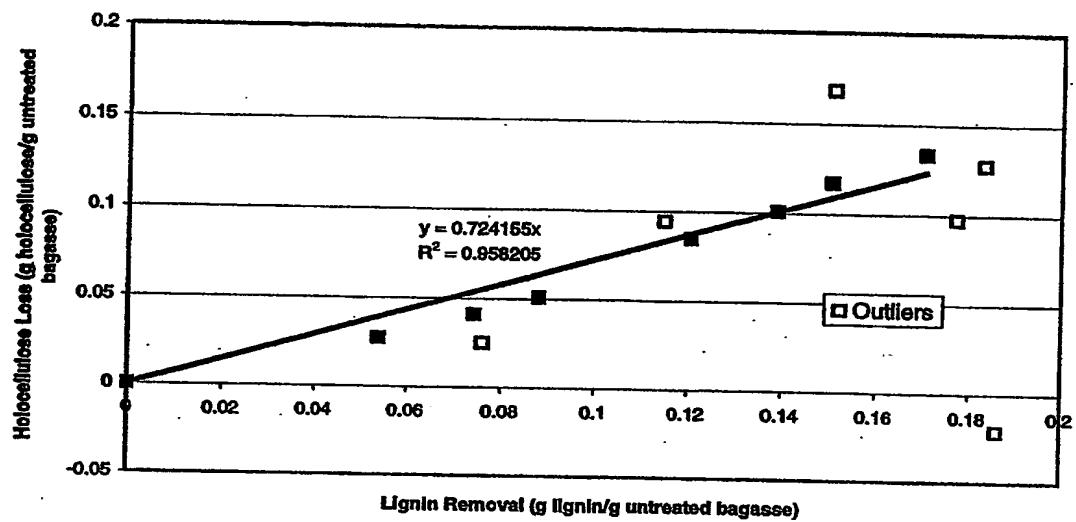


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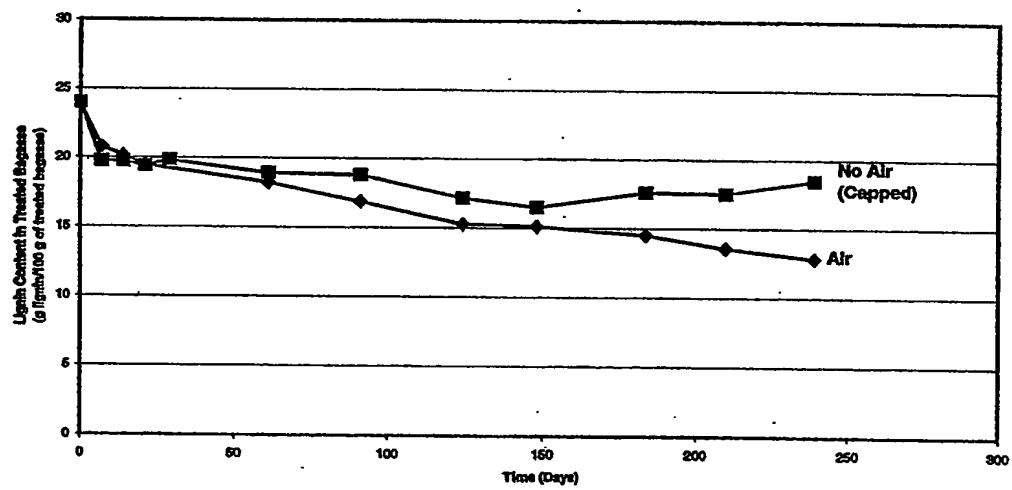
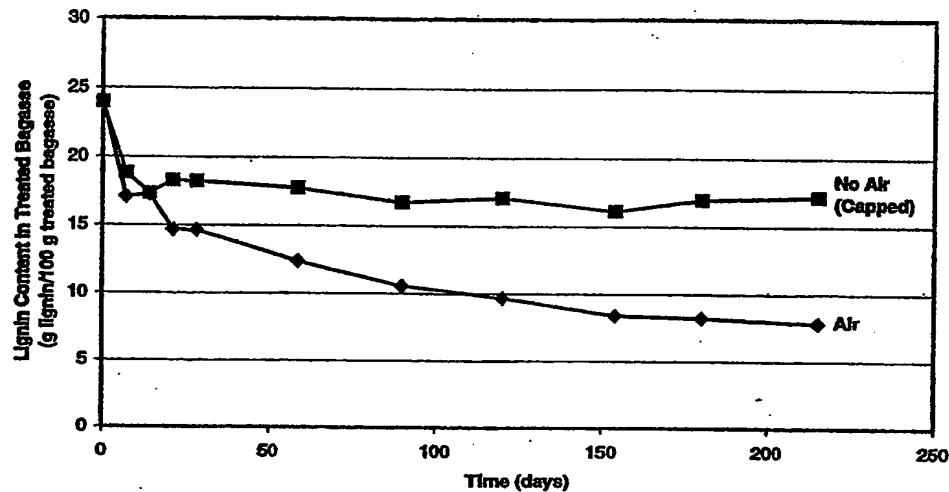
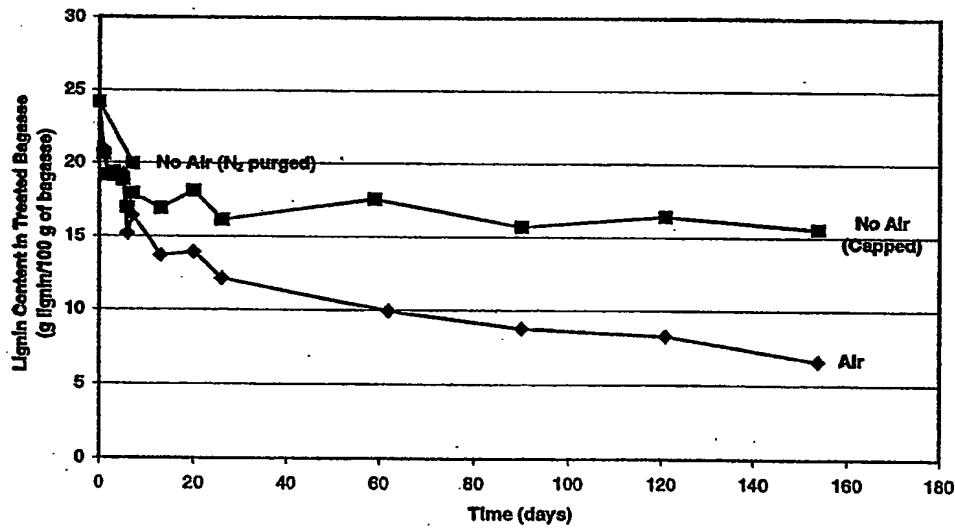


Fig. 31



**Fig. 32**



**Fig. 33**

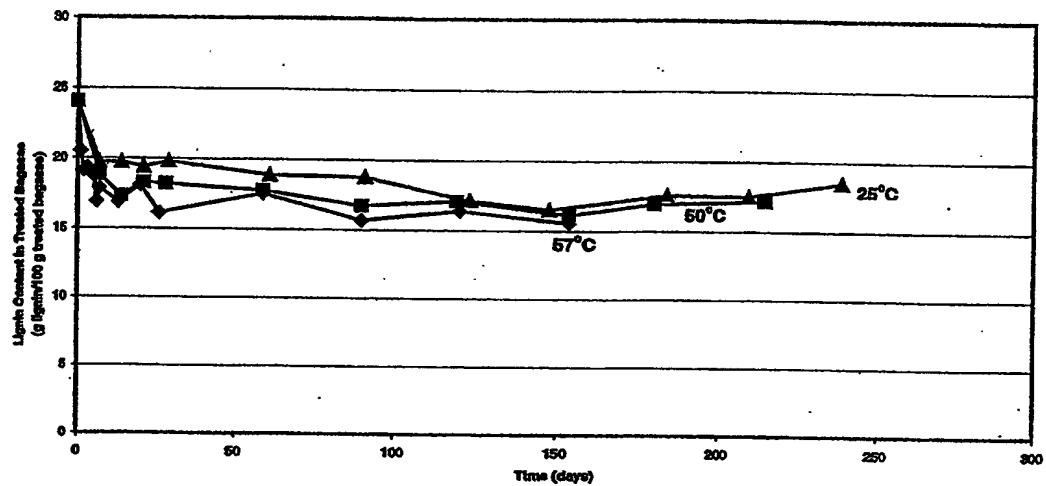


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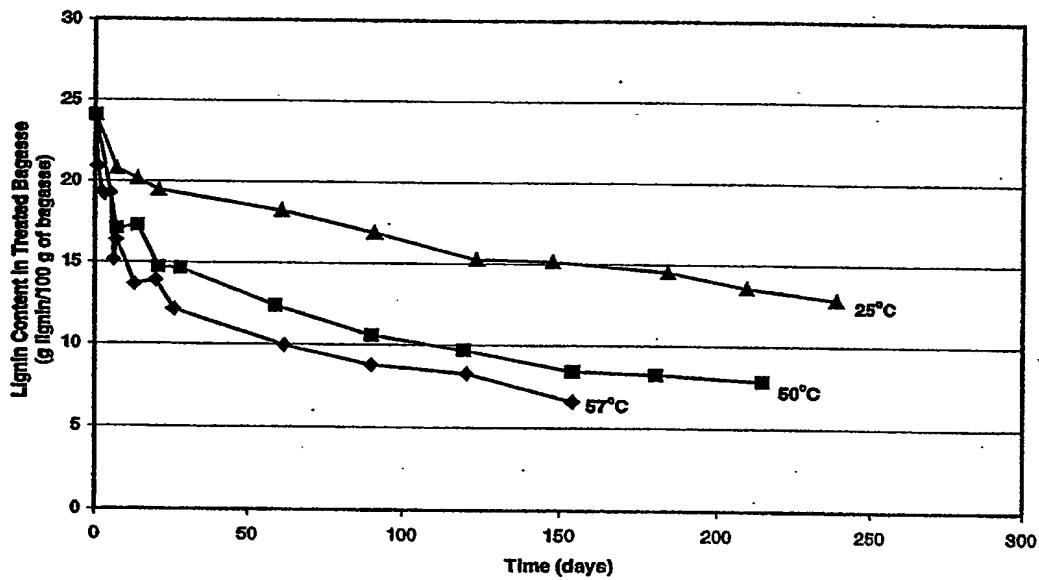


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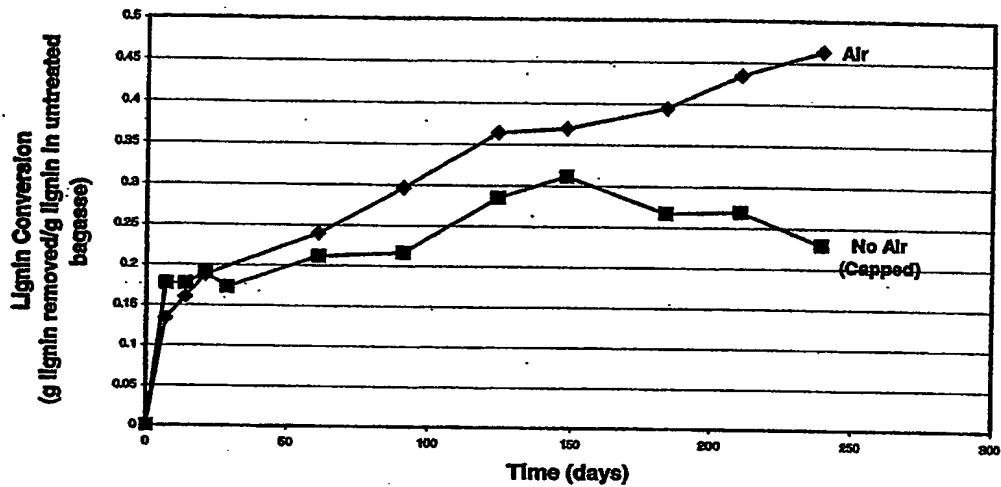


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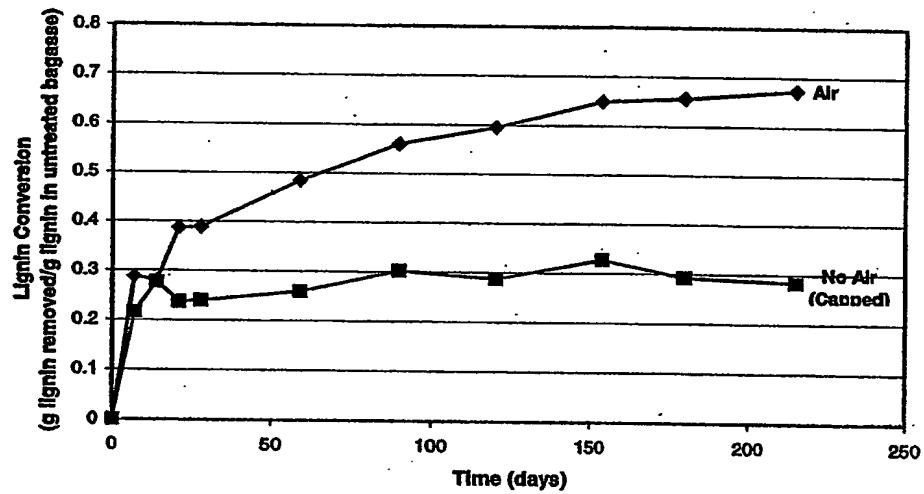


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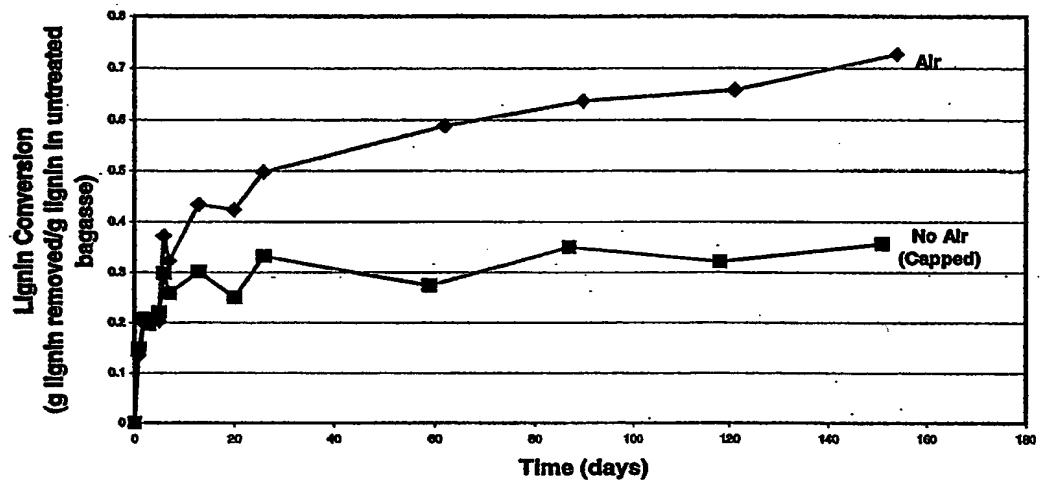


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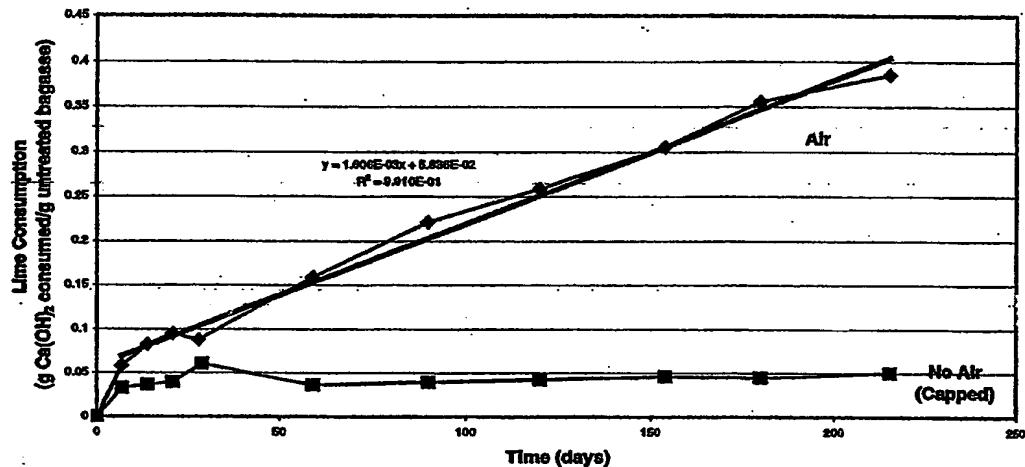


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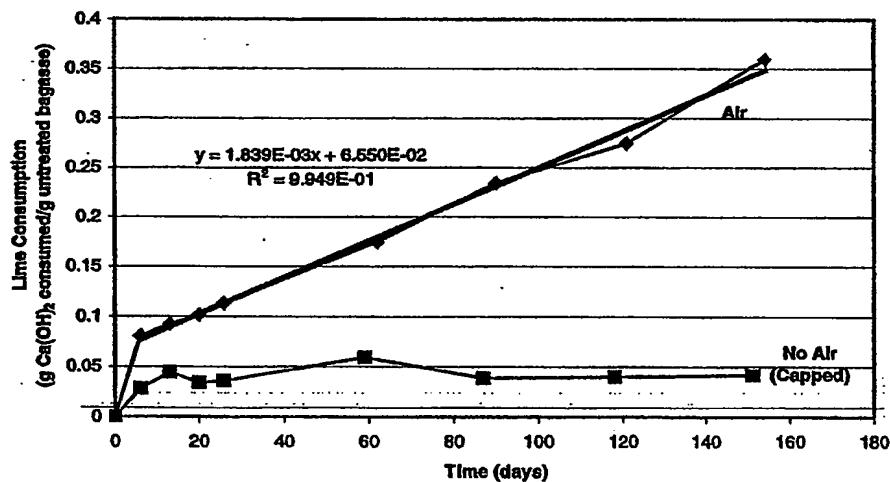


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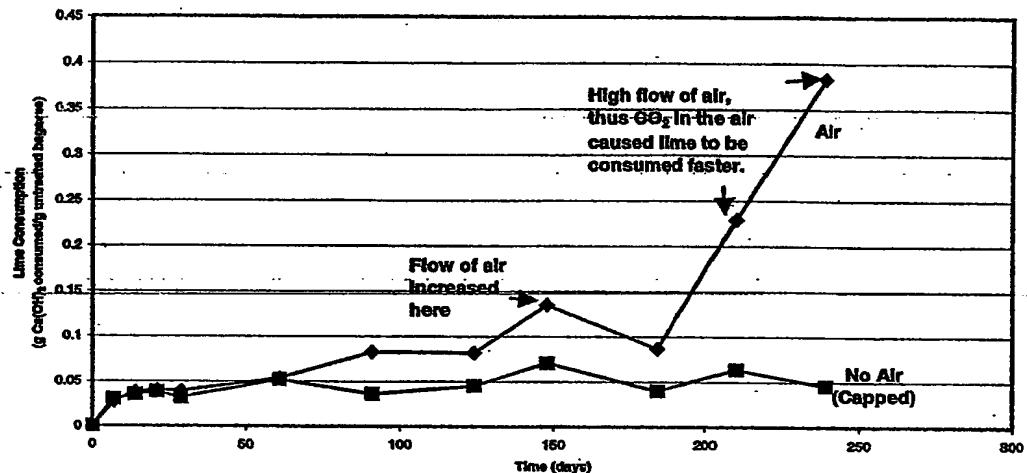
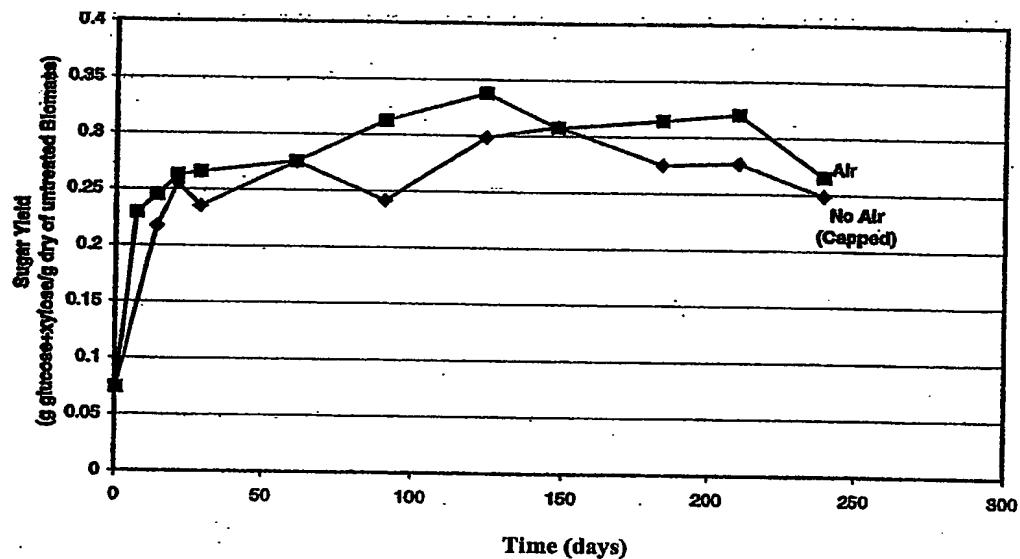


Fig. 41



**Fig. 42**

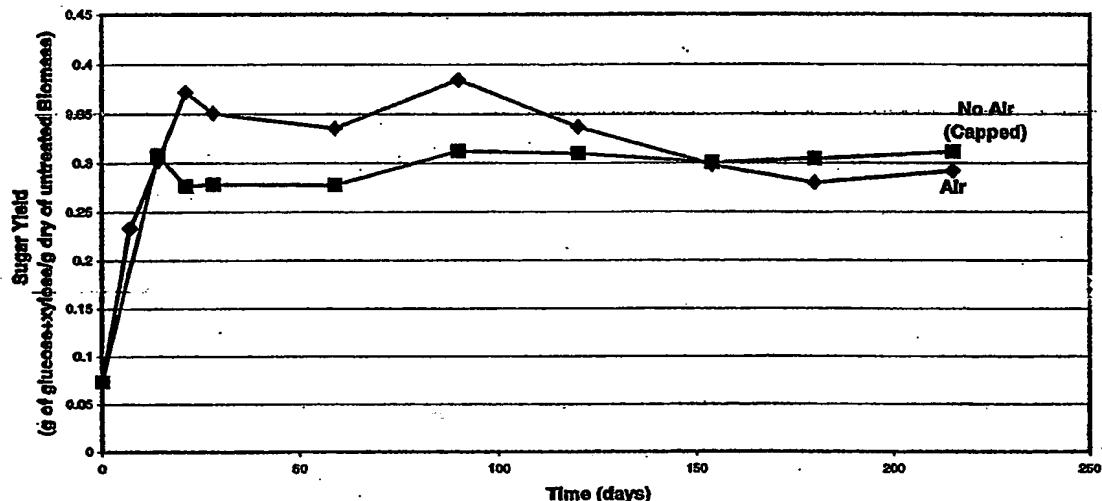


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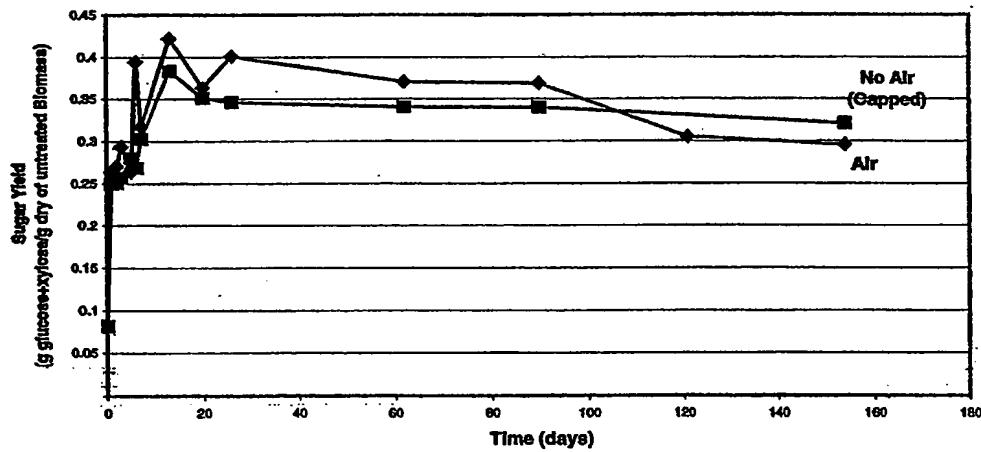


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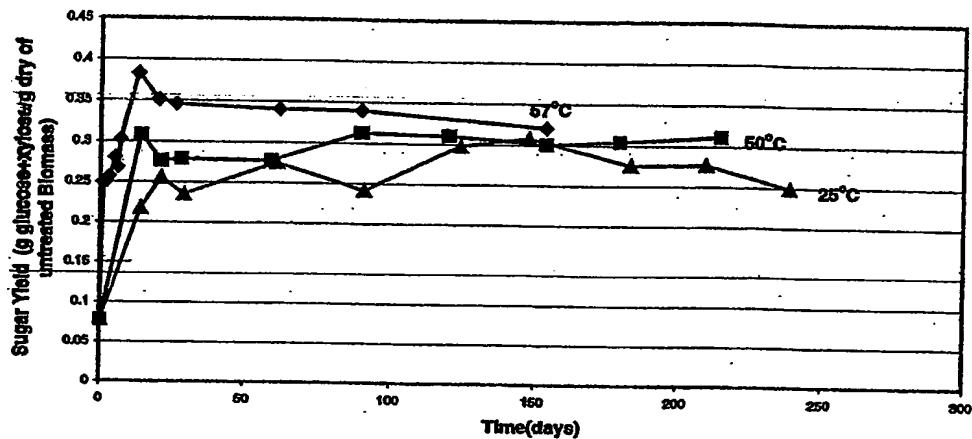


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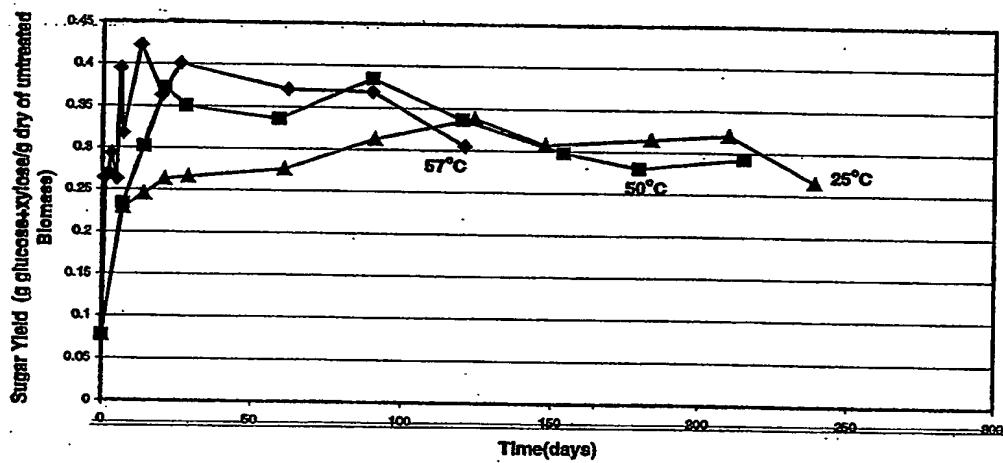


Fig. 46

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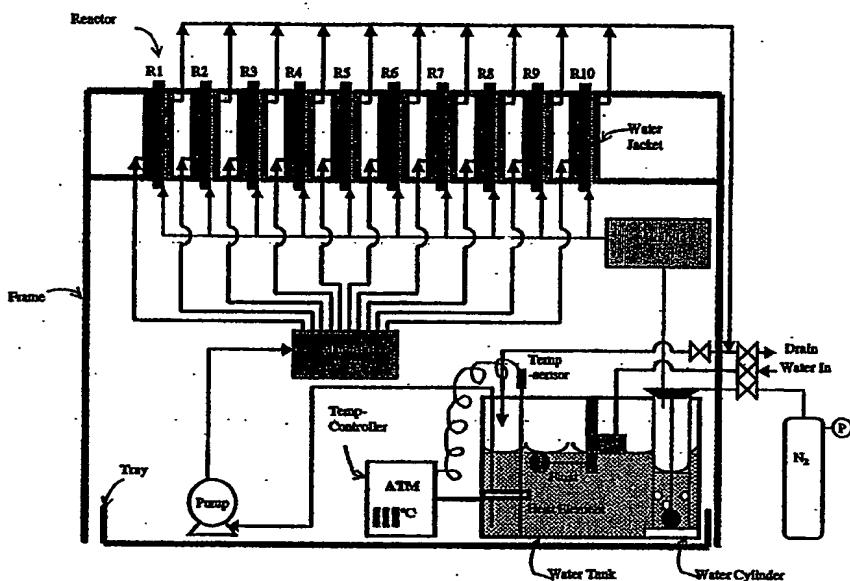


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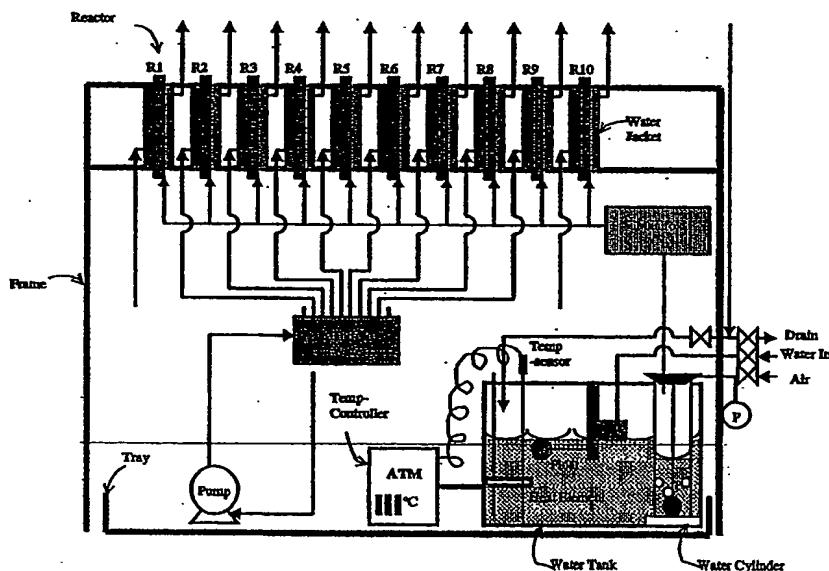
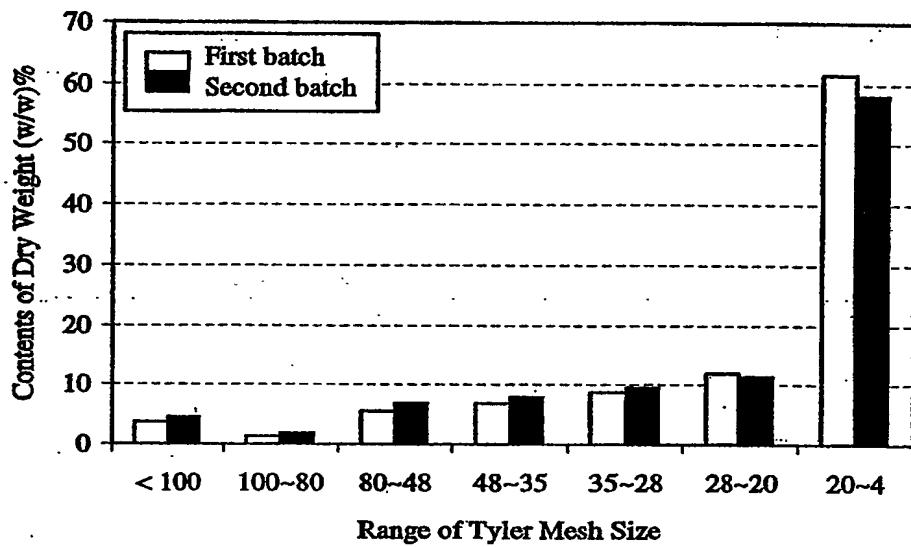


Fig. 48



**Fig. 49**

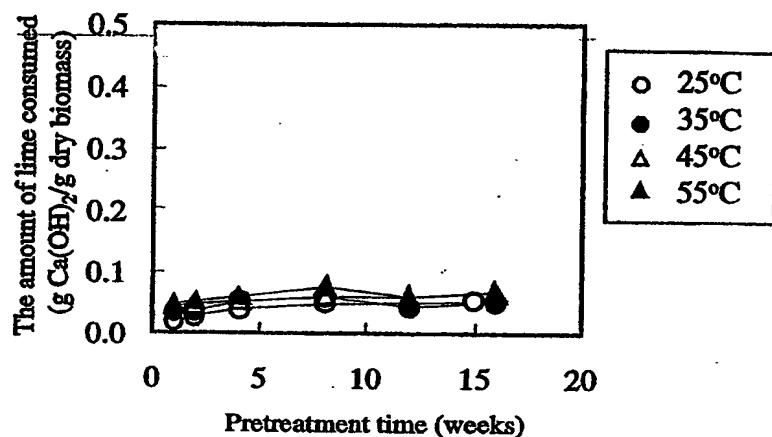


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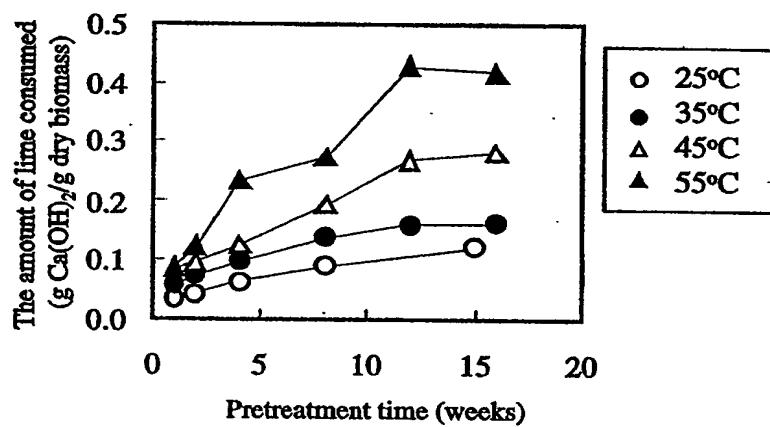


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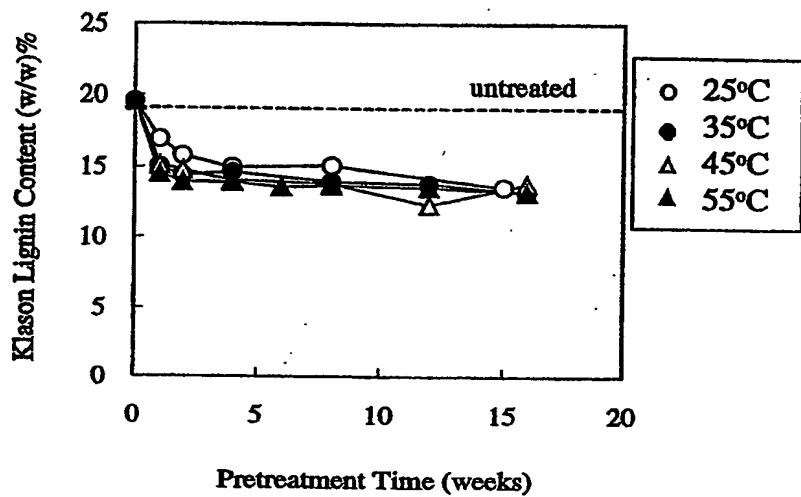


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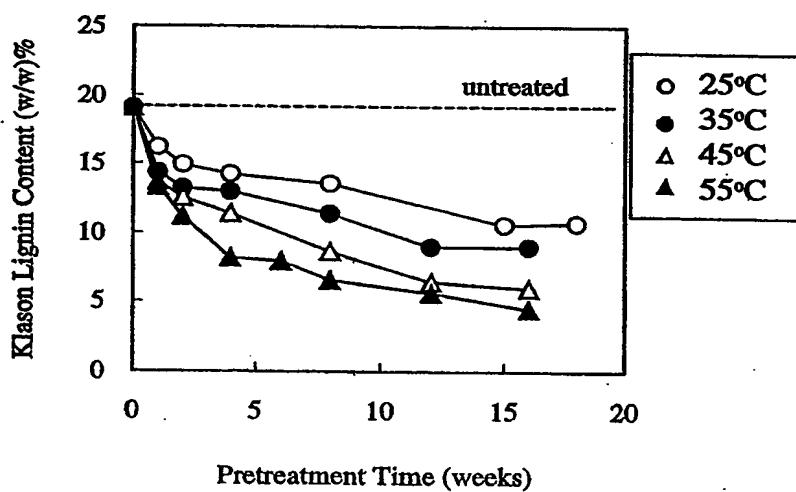


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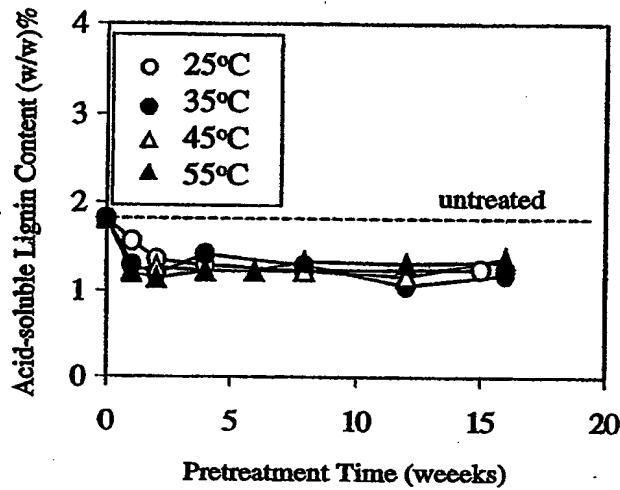


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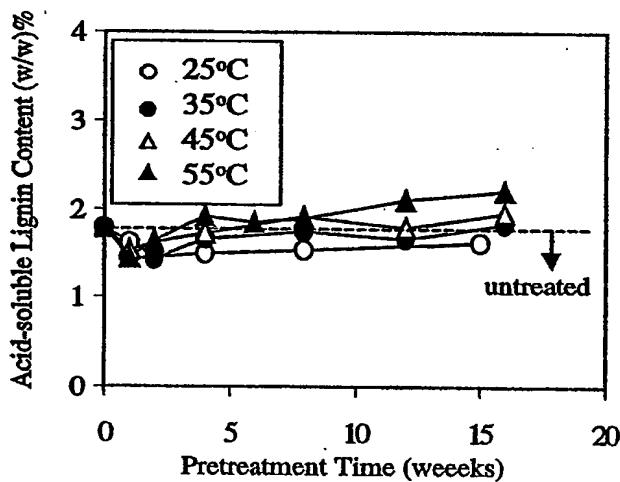
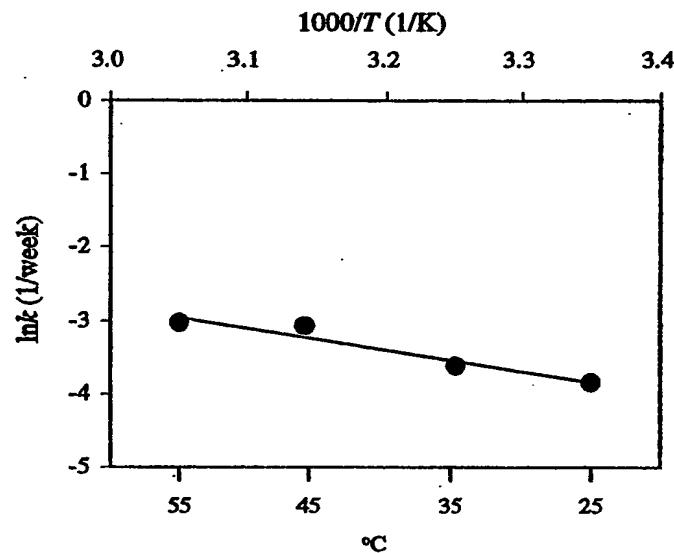


Fig. 55



**Fig. 56**

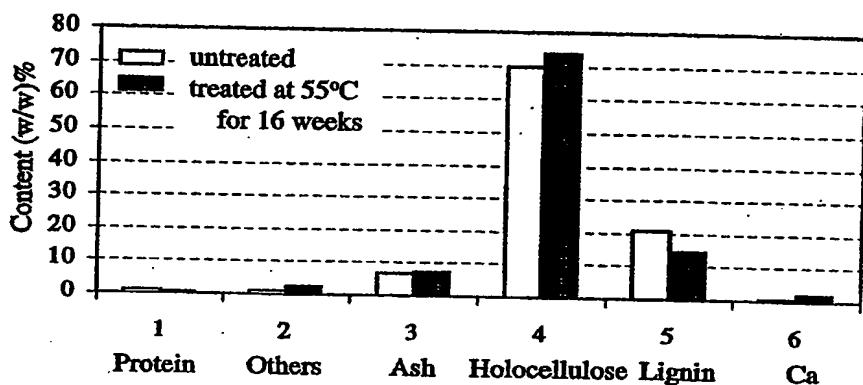


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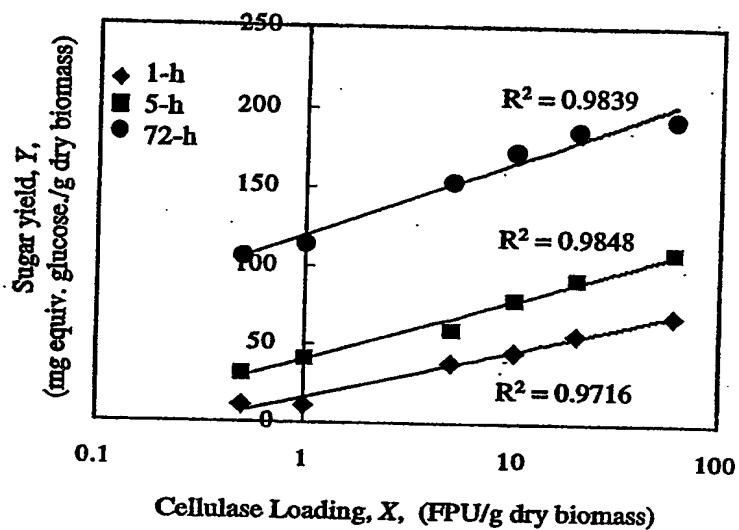


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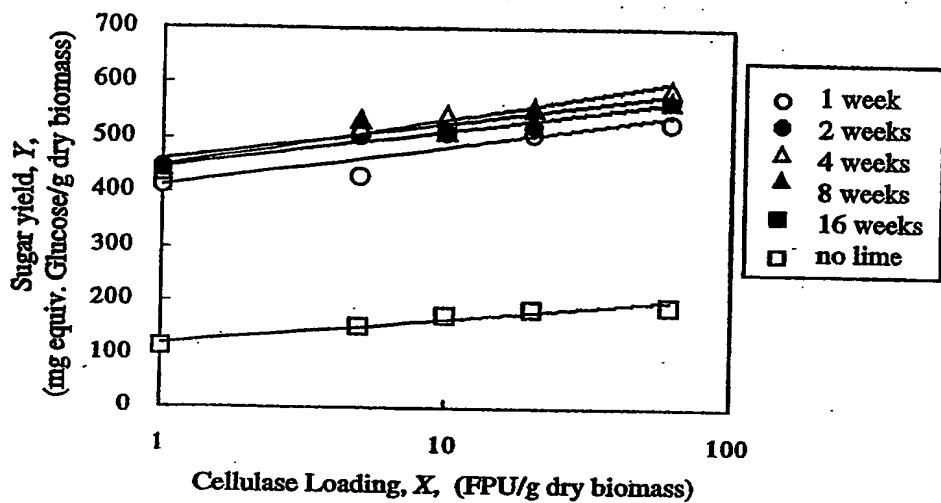


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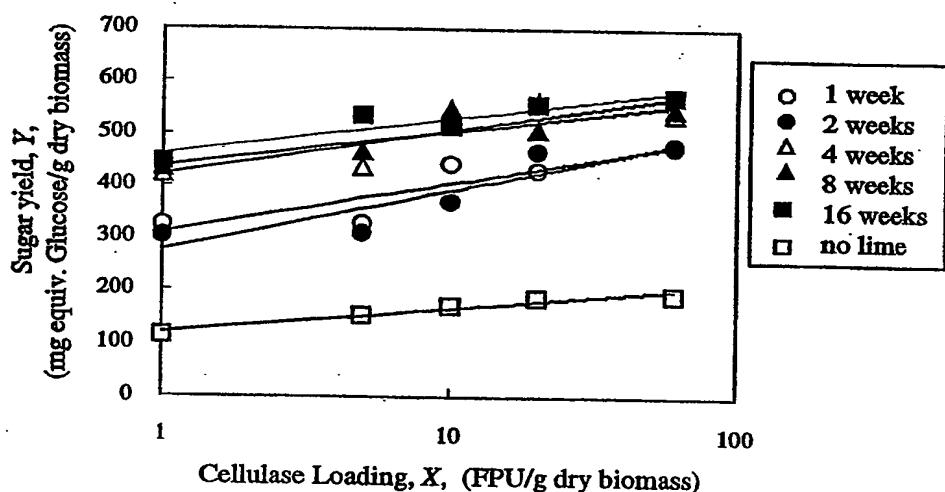


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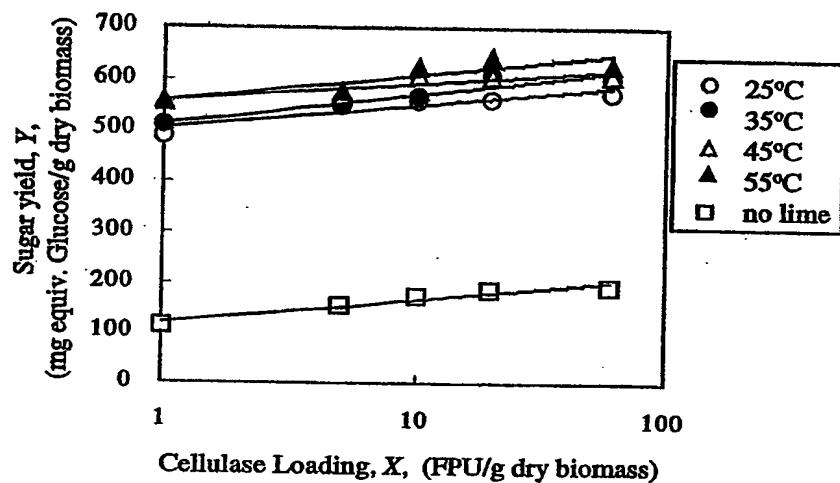


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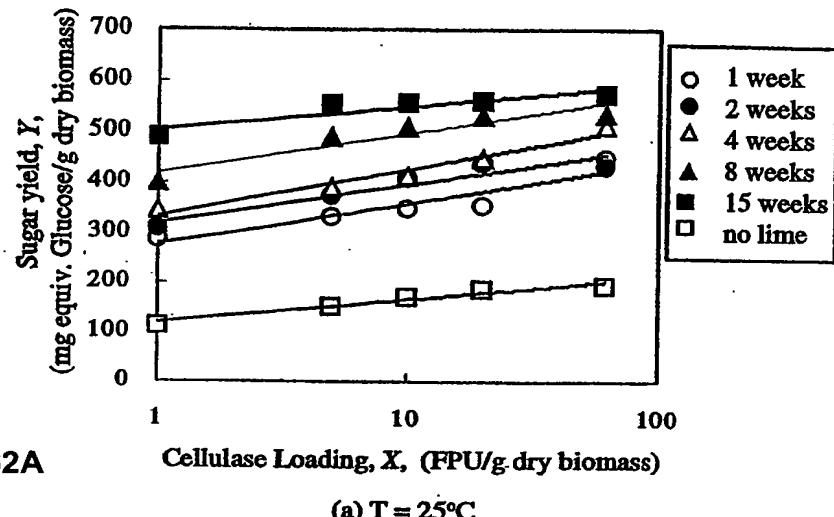


Fig. 62A

Cellulase Loading,  $X$ , (FPU/g dry biomass)

(a)  $T = 25^\circ\text{C}$

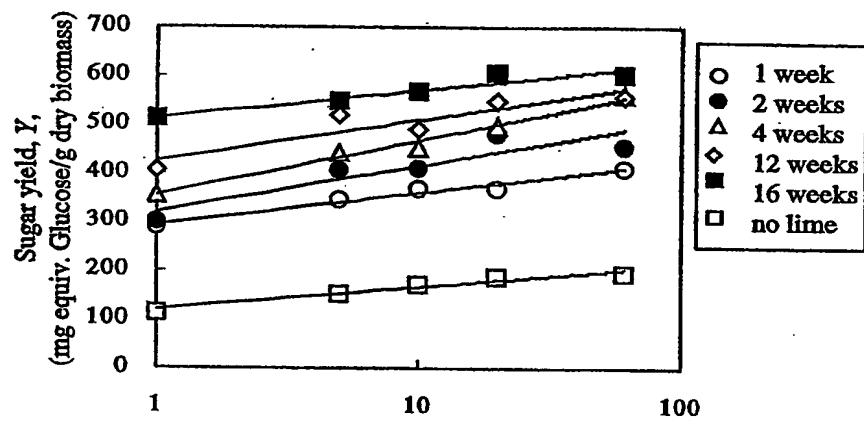


Fig. 62B

Cellulase Loading,  $X$ , (FPU/g dry biomass)

(b)  $T = 35^\circ\text{C}$

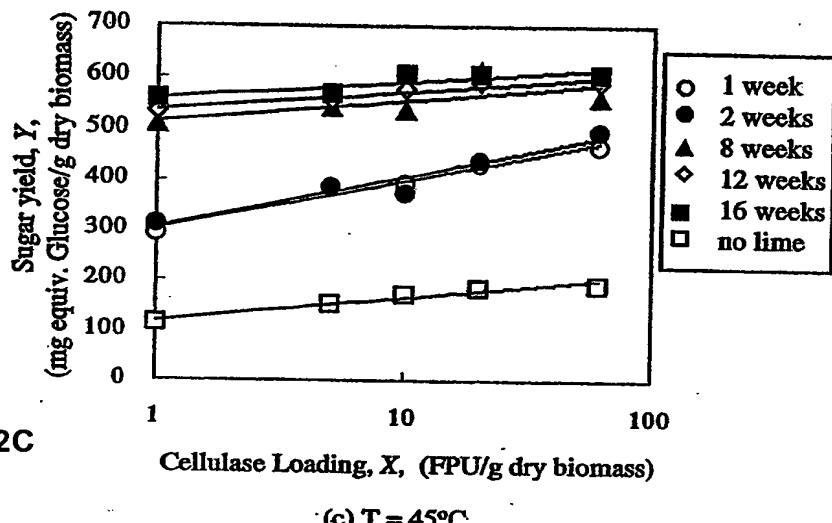


Fig. 62C

(c)  $T = 45^\circ\text{C}$

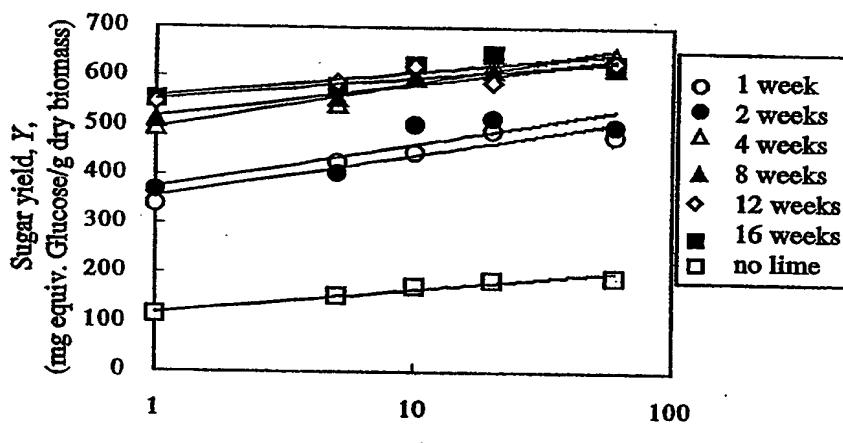


Fig. 62D

Cellulase Loading, X, (FPU/g dry biomass)

(d)  $T = 55^\circ\text{C}$

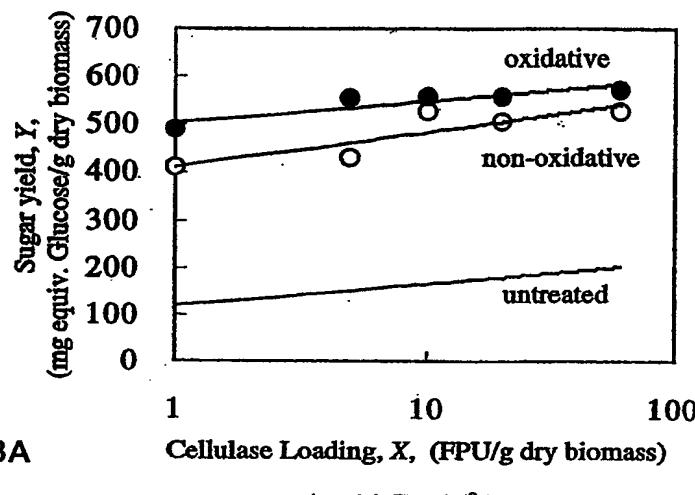


Fig. 63A

Cellulase Loading, X, (FPU/g dry biomass)

(a)  $T = 25^\circ\text{C}$ .

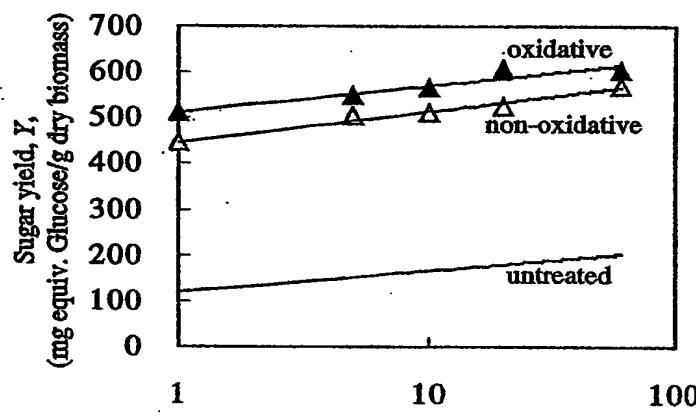


Fig. 63B

Cellulase Loading, X, (FPU/g dry biomass)

(b)  $T = 35^\circ\text{C}$

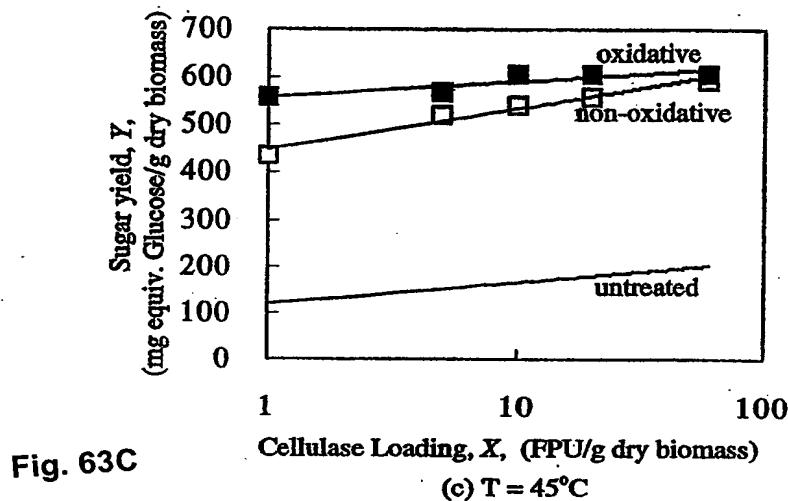


Fig. 63C

(c)  $T = 45^\circ\text{C}$

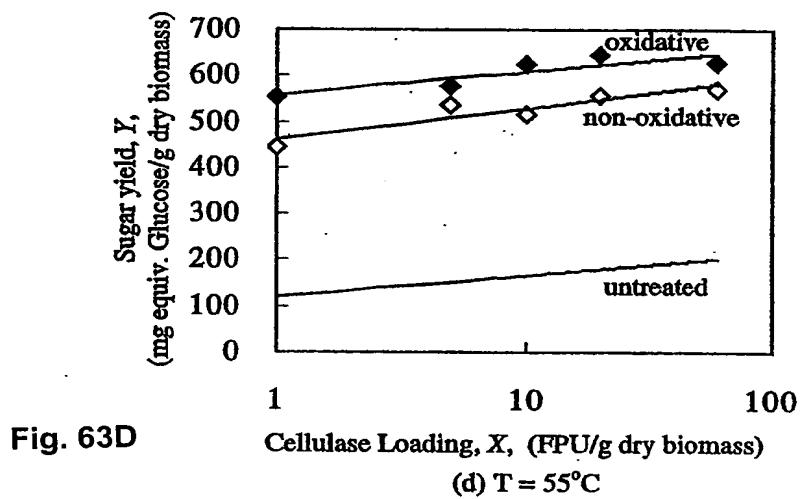


Fig. 63D

(d)  $T = 55^\circ\text{C}$

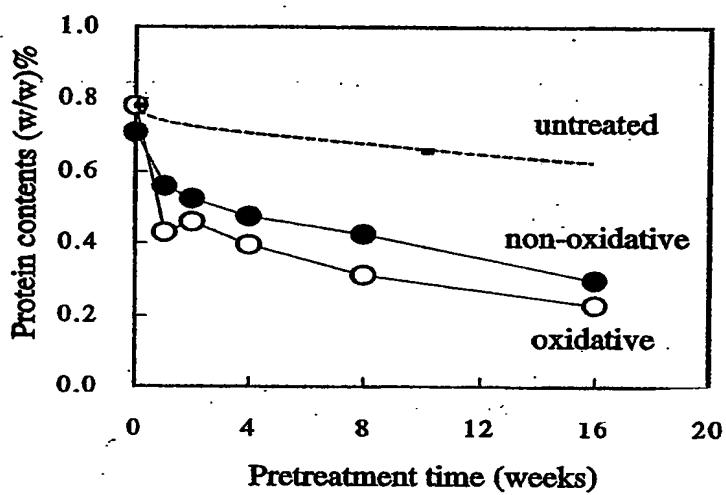


Fig. 64